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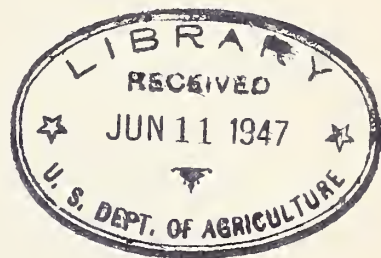
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# Foreign Agriculture



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Farm Policy, Production,  
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## THE HOG INDUSTRY IN THE NETHERLANDS . . .

By Harry E. Reed\*

Plentiful supplies of skim milk and, until the early 1930's, an expanding export market combined to encourage hog production in the Netherlands. Great Britain has always been the leading export market for Netherland pork, most of it being shipped fresh in the earlier years. Since 1930, continental-type bacon has been the chief export item. Development of the Netherland cured-pork industry has been an important factor in reducing the British market outlet for United States pork. The British import-control policy in effect since 1932 largely accounts for the decline that has taken place in Netherland hog numbers in recent years and for the effective machinery set up to control hog production and marketing in the Netherlands. The control policy appears to have had a generally favorable effect upon the hog industry. Maintenance of an export business largely dependent upon the British market, however, suggests the necessity for indefinitely prolonged control measures.

In addition to supplying the domestic pork requirements of about 8 million people, Netherland hog production has been geared to the export market. A few years ago (1925-1929) exports of hogs and hog products accounted for about 14 percent of the value of agricultural exports and about 5.5 percent of the value of all exports from that country.

Despite its prominent position in the agricultural economy of the country, however, hog production has always been incidental to dairying, the leading agricultural enterprise. Hog feeding is the most suitable method of utilizing the large quantities of skim milk and whey, and hogs are considered to be indispensable to the dairy industry. Hogs rank second to cattle as a source of farm income, accounting for approximately one-fifth of the value of total agricultural production during the period 1925-1929. Domestic rye and potatoes are used extensively in hog-feeding operations, but it is necessary to supplement home feeds with imported grains.

The extensive cattle industry is based primarily upon the suitability of the land for pastures. Over one-third of the total land area and more than one-half of the agricultural area is under grass. Supplementary feeds for cattle are available from the milling and oilseed-crushing industries, but a certain amount of cattle feed is imported. The cattle population is densest in urban milk sheds and in the best grass areas, where for various reasons the cultivation of other crops is of secondary importance. The cattle are of the dual-purpose and dairy types. Dairy products account for about one-third of the value of agricultural production. The Netherlands ranks as one of the world's leading surplus dairy-products countries, about half of the total production of butter and cheese being exported.

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Figure 1.

## DISTRIBUTION OF HOGS IN THE NETHERLANDS IN 1936



FROM L'AGRICULTURE AUX PAYS-BAS





Figure 2. Netherland landscapes are dotted with cattle, mostly black and white Friesians of a strictly dairy type.

The cattle and hog industries are good examples of the high degree of agricultural specialization developed in the Netherlands. A rather wide variation in soil types and proximity to important export markets for certain agricultural products have been important factors in this development. Specialization, however, has been accompanied by a national deficit in beef, bread grains, feed grains, fodder, and certain other products, including fresh fruit. Formerly, the highly developed commercial machinery of the country encouraged the exchange of Netherland agricultural specialties for items in which deficiencies existed. Since 1932, however,

the Netherlands has developed one of the most extensive agricultural-control programs to be found in any country. Emphasis has been placed on protecting domestic producers of those products formerly imported, while at the same time supporting the prices paid to farmers producing export products. Hogs have figured prominently in the national agricultural-control program.

#### THE HOG SITUATION PRIOR TO 1932

The Netherlands has been a surplus hog-producing country for decades. As in Denmark, the hog industry expanded in the latter part of the nineteenth century, when the production and export of grain by new-world countries greatly increased the competition for European grain producers. At the same time, increased industrialization of Europe opened up larger markets for livestock products. Great Britain provided the greatest single outlet for Netherland pork, but an important export trade in "spek" (fatbacks) was conducted with Germany and in fat-hog and porker (fresh-pork) carcasses with Belgium and France—

A fresh-pork carcass trade with England developed before the World War. Dressed carcasses weighing around 85 pounds each were shipped regularly across the channel by fast boats. This trade expanded after the war and reached a peak in 1936 when, as a result of foot-and-mouth disease on the Continent, Great Britain placed an embargo on the importation of fresh pork. Closing of the British market, which had taken over 40 percent of Netherland pork exports in the early twenties, was a blow to the hog industry. Netherland farmers, however, shifted rapidly from pork-type to bacon-type hogs; slaughterers quickly adopted Danish bacon-curing methods; and by 1930 exports of Wiltshire sides to Great Britain accounted for more than half of the hog and pork exports from the Netherlands.

Under the influence of declining prices in early depression years, agricultural production in the Netherlands, like that in other countries, expanded as farmers sought to prevent declines in their income. Hog production and exports of bacon to British markets increased as grain prices declined; and, when Great

Britain abandoned gold late in 1931, a crisis was precipitated in the Netherland hog industry, which brought about Government aid.

#### GOVERNMENT AID FOR THE HOG INDUSTRY

The objectives of the hog crisis legislation, enacted in May 1932 by the Netherland Government, were (1) to restore profits to hog producers and (2) to prevent a collapse in the hog industry with subsequent loss of export trade and impairment of large capital investments. Government aid for hog producers has taken the form of control over production, export processing, and import and export of hogs, pork, and competitive products.

A semiofficial agency was set up in May 1932 to administer the crisis measures. The agency, known at first as the Netherland Hog Centrale (Nederlandsche Varkenscentrale), later as the Netherland Livestock Centrale (Nederlandsche Veehouderijcentrale), <sup>1/</sup> was granted authority to adjust and regulate hog production. It was also given a monopoly on all imports and exports of hogs and pork products and power to fix prices and levy slaughter taxes. The head office of the Centrale, established at The Hague, operates under the supervision of a Government commissioner acting for the Minister of Agriculture. Producer compliance with the crisis measures and regulations laid down by the Centrale is obtained through 11 Provincial Centrales. Contact with producers is made through local committees.

#### Production Control

Production control is applied through a regulation that requires all hogs weighing over 22 pounds to be earmarked and makes it illegal for anyone to own or transport an unmarked hog. The total number of earmarks available for a specified period, usually a calendar year, is determined by the Centrale on the basis of the probable future domestic and foreign demand. Earmarks are allocated to individual producers by the Provincial Centrales on the basis of their previous breeding operations, and the actual marks are tattooed in pigs' ears by official earmarkers employed by local committees.

In 1934, control over production was extended by limiting the total number of hogs that could be kept in the Netherlands at one time and specifying the proportion of the total that could be made up by sows. In addition, to avoid dislocation of established feeding practices and to prevent hardships on those who were accustomed to feeding but not breeding hogs, a system of hog allotments or permits to keep hogs weighing over 55 pounds was introduced. This system regulated fattening operations by forcing a distribution of earmarked pigs through limitations on the number of 55-pound hogs that could be kept by individuals. The earmarks, which apply to pigs under 22 pounds, are distributed to sow owners, but the allotments or permits to keep hogs weighing over 55 pounds are distributed to both breeders and feeders in accordance with their fattening operations during a base period.

<sup>1/</sup> Measures for dealing with the agricultural crisis in the Netherlands were adopted at first in a piecemeal manner as temporary aids to distressed producers. Later, they were systematically developed and extended until practically all phases of agriculture were conducted under schemes and programs made possible by crisis legislation. In the process of simplifying and coordinating the schemes and their administration, the Varkenscentrale, which administered the hog measures, was combined with the Rundveecentrale, or cattle agency. The new agency, the Veehouderijcentrale, was given the task of administering all measures dealing with livestock and livestock products. See "Farm Relief Measures in the Netherlands," February 1937 issue of Foreign Agriculture, and section on the Netherlands in the February 1938 issue.



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## Control of Foreign Trade

Under authority granted by the crisis legislation, the Centrale acquired a monopoly control of the exports of all hog and pork products. Hogs for export, mostly bacon hogs, are bought and processed for the account of the Centrale through a system of contracts made with existing processing establishments. Pork for domestic consumption is not subject to control, and the domestic trade has been interfered with as little as possible. Spek or other cuts that enter export trade and are taken from hogs processed primarily for domestic consumption are purchased by the Centrale and exported.

In practice, the Centrale has exported all bacon and other pork products possible to Great Britain in accordance with British import-quota allocations and to such other remunerative outlets as have been obtainable through trade and other agreements. Surpluses in the hands of the Centrale that could not be disposed of on remunerative markets have been exported, the losses being made good from a "crisis" fund. Control over imports of pork and competitive products operates through import licenses or permits granted by the Centrale, for which an import-license fee is charged.

## Price Fixing

Prices for export bacon hogs were fixed by the administrative agency on the basis of production costs plus a reasonable profit, some consideration being given to the British price for bacon. When prices were first fixed, a great deal of assumption regarding costs was involved; but, as the scheme progressed, the section of the Centrale that fixes prices and determines earmark and allotment numbers has been able to assemble considerable worth-while data, and prices are now fixed in a scientific manner on the basis of feeder-pig prices, feed costs, overhead, etc.

Fixed prices for export bacon hogs have had an influence on prices of hogs for domestic consumption, and the guiding effect of fixed prices has been enhanced by the Centrale's readiness, during certain periods, to resort to market-supporting purchases of fat hogs. Authorities have made no attempt to keep prices from rising, and under such a system it has been possible to divorce bacon-hog prices from the influence of world bacon prices and to control them as long as a surplus existed; but, when shortages have occurred, all control over hog prices has been lost.

## The Slaughter Tax and Other Revenue Sources

The slaughter tax was adopted when the Centrale began operations in August 1932 and applied only to hogs for domestic consumption. The tax was paid by the butcher or person killing the hog. Certain exemptions were made for hogs slaughtered at home, and drawbacks were paid for the part of the tax that applied to export spek. The tax provided the greater part of the funds used by the Centrale, and during the time the tax was imposed it varied from Fl.0.06 to 0.10 per kilogram, dead weight, depending on the financial needs of the administrative agency. The full effect of the slaughter tax alone cannot be appraised because the tax combined with price fixing, market-supporting purchases, declining production, and other factors to bring about the changes that occurred in price levels and pork consumption. It is extremely doubtful whether the slaughter tax in itself had any great or prolonged influence on domestic pork prices, and it was abandoned in September 1936, when the currency was devalued.

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Money derived from slaughter taxes, import-license fees, Government grants, etc., has been deposited in a general "crisis" fund, upon which all crisis administrative agencies draw for operating expenses, losses, and subsidies. The general "crisis" fund is budgeted by commodities, but the exhaustion of funds budgeted for any one commodity does not stop operations, since bookkeeping permits "loans" from one commodity fund to another.

The plan for aiding hog producers has developed into the most complete and thorough production control operating in any European country. During the period since the hog crisis measures were adopted, authorities have never been reluctant to introduce changes that would make for smoother and more efficient operation, and the plan has demonstrated that it is peculiarly adapted to conditions in the Netherlands. In keeping with the general idea of all Netherlands agricultural-relief measures, which tend to reduce the production of commodities that must be marketed abroad and to increase the production of those that can find a market at home, hog production has been curtailed.

The effects of the control measures on production, processing, and marketing may be seen in the following discussion of the industry.

#### REGIONAL DISTRIBUTION AND PRODUCTION PRACTICES

The distribution of hogs over the country tends to follow that of cattle, except in the Province of Friesland in the northern part of the Netherlands, where butter is the principal dairy product and much of the skim milk is processed in a condensed or powdered form, and in the northwest where cattle farmers on clay soils keep few hogs. Production practices differ somewhat over the country as a whole because of the character of available feed supplies, markets, tradition, and farming practices. While hog production enjoys a more general distribution in the Netherlands than in most other European countries, there are two outstanding surplus areas, and it is from these that the majority of hogs entering commercial channels come.

The principal fat-hog producing section lies in the western part of the country in a triangular area between Rotterdam, Amsterdam, and Utrecht. This section, in which clay soils predominate, embraces one of the best grass areas in the Netherlands and in it the dairy industry is directed largely toward cheese production. Hog-fattening operations are based on whey. This section produces little feed grain, but nearness to ports facilitates the use of imported feed grains. Excessively fat hogs, weighing around 440 pounds, and lighter-weight meat hogs, weighing about 330 pounds, are produced.

The most important bacon-hog-producing sections lie farther to the east where sandy soils favor rye and potato growing and butter production provides large quantities of skim milk. It was in these sections that most of the lightweight porkers were produced for the British market prior to 1926, and it is here that the greatest developments in bacon-hog production have taken place.

Over the rest of the country, bacon hogs and meat hogs weighing from 220 pounds to 275 pounds are produced for domestic markets. Feeds depend largely on dairy byproducts and whatever else is available on farms, but generally additional feeds must be purchased. Feeder-pig production is important in several parts of the Netherlands, particularly in the territory surrounding Meppel and Nijmegen, where breeding operations are so extensive that sow owners have insufficient feed supplies to finish all their pigs.





Figure 3. The feeder pigs behave much better than American pigs would under similar conditions. They stay parked when placed in boxes, require no watching, and seem content to wait until some buyer is attracted and takes them to their new home.

commercial channels are finished by feeders who purchase their feeder pigs and conduct relatively extensive operations. The allotment system, which requires permits for hogs weighing over 50 pounds, has served to increase the importance, though not the extent, of feeder-pig production.

Breeders of pure bred hogs and many farmers who keep sows for commercial production have their own boars, but most sow owners depend on community boars, or boars owned by neighbors who use them for public service. Most of the boars used in the Netherlands are registered purebreds, and purebred boars must be inspected and proven before they can be recorded. Subsidies are available both for the purchase and for the maintenance of "premium" boars, which are placed at the disposal of a certain number of breeders, and about 70 percent of the sows in the Netherlands are served by such boars.



Figure 4. A "traveling" Danish Landrace boar, 5 years old, of approved bacon type.

Most of the breeding hogs in the Netherlands are on small and medium-sized farms and are kept as a side line to dairy operations. The unit of production varies, of course, with the size of farms and the number of cows. As a result of the official limitations placed on production, small farms (from 2 to 25 acres), which formerly kept 3 or 4 sows, now keep only 1 or 2, and medium-sized farms (from 25 to 50 acres), which formerly kept from 6 to 10 sows, now keep only 3 or 4. <sup>2/</sup> Purebred-hog production also functions as a small-unit enterprise. Fattening operations are generally on a much larger scale than is indicated by sow holdings on individual farms, there being quite a distinction between breeding farms and fattening farms. Bacon hogs are usually fed out by producers, but an appreciable part of the fat hogs that enter com-

<sup>2/</sup> Small farms make up about 70 percent of all farms in the Netherlands, medium-sized farms about 20 percent, and large farms (over 50 acres) about 10 percent.



Prior to the adoption of production control, most farrowings came in the spring and fall, the practice being much the same as the two-litter system followed in the United States. Two or more litters per year are still customary; but data on earmark takings by breeders show that, since production control was extended in 1934 and the proportion of sows to total hogs was limited, there has been a tendency to distribute farrowings more evenly throughout the year. This development is attributed in part to the increasing number of boars used for public service, especially "traveling" community boars. Two farrowing peaks are still visible in weekly earmark-taking data, however, and an equal distribution of farrowings over the year would not permit seasonal hog supplies to be in keeping with demand conditions (see page 317).

### Feeding Practices

Domestic feeds, notably dairy byproducts, rye, and potatoes, provide the greater part of the hog feeds used in the Netherlands since hog production has been reduced. It is probable that prior to 1934 the greater part of hog feeds were imported, and even now it is estimated that the country is dependent on foreign supplies for approximately 40 percent of the concentrated feeds used for hogs.

In the eastern part of the country, rye, potatoes, and skim milk are the basis of the fattening ration, rye being ground, potatoes boiled, and skim milk fermented. Rations made from a combination of these three feeds are highly recommended and are considered excellent for the production of bacon and lightweight pork hogs. Purchased feeds are usually corn, milling byproducts, and, on occasion, fish and meat meals. In the western part of the country, whey is about the only important feed produced domestically, and supplementary feeds, mostly corn, must be purchased.

The price-fixing formulas followed by the Livestock Centrale provide for a feed requirement (grain basis) per-pound gain of 3.25 pounds for bacon hogs and from 3.75 to 4 pounds for fat hogs. This relatively low feed allowance necessitates efficient breeding and feeding practices; and, since the adoption of price-fixing measures, hog producers have paid much more attention to good blood lines, feeding problems, and the results obtained by experiment and testing stations. As a result, hog-feed requirements per pound of gain are among the lowest in Europe, and efficient feeders obtain results that are entirely in keeping with the figures used by the Centrale in fixing prices. Good feeders produce bacon hogs weighing 200 pounds in 27 weeks from birth; meat hogs are expected to weigh 310 pounds at 9 months of age; and 440-pound fat hogs are produced at an age of 1 year.

The Government of the Netherlands, in cooperation with the Provincial agricultural associations, maintains a staff of specialists who advise farmers on breeding and feeding problems. The results of this extension service are becoming more and more evident. A recent development along feeding lines has been the rather general use of mixed and blended feeds. Recent increased demand on the part of farmers for efficient blends and the fact that such feeds can be prepared more cheaply in bulk than by individuals have stimulated the production and sale of mixed and blended feeds. Mixed feeds are based on the results of feeding trials, are approved by the Central Bureau for Livestock Feeding (an official agricultural association agency) and are supplied to farmers at costs lower than they would be if the farmers bought the grain and prepared the feed themselves.



## Types and Breeds

Improvement in hog types in the Netherlands began around the turn of the century when improved boars were imported and crossed with native hogs of the Celtic strain indigenous to northern Europe. German Edelschweine and Veredelte Landschweine were introduced and crossed with native hogs, and a meat type for home consumption and export to England in the form of lightweight carcasses was developed. When Great Britain placed an embargo on fresh pork in 1926 and the Netherlands found it necessary to change hog types in order to participate in an export bacon trade, farmers took a leaf from the Danish book and imported a few Danish Landrace boars. German Veredelte Landschweine were also used to a large extent, and Swedish Large Whites to a very small extent, in the development of the Netherland bacon-hog type. At present, two types or breeds are recognized - a Large White, which is the pure Edelschwein adapted to conditions in the Netherlands and used for fat-hog production, and a Landrace evolved from crossing Danish Landrace and German Veredelte Landschweine, which is used for the production of export bacon, conserved meats, and pork for home consumption.

Each Province in the Netherlands has its own herdbook association, which registers both Landrace and Large Whites. The Provincial herdbook associations are united in the Central Bureau for Pig Breeding in the Netherlands, which makes for uniform requirements and recording methods. Only purebred animals are admitted to the register of births, and before purebred hogs can be recorded in herdbooks proper they must be inspected by herdbook officials, conform to certain standards, and satisfactorily attain minimum performance records. In 1937, there were about 12,000 members in the several herdbook associations, and the operation of production control has stimulated rather than detracted from the interest of farmers in purebred hogs.

Testing stations have been established along Danish lines. <sup>3/</sup> The stations operate under the supervision of specialists, who work in close cooperation with the herdbook associations. In Denmark, breeders of purebred hogs are permitted to send four pigs from one litter of each purebred sow to the station for testing; but, in the Netherlands, selection of the pigs for testing is made by the specialists, who have a rather intimate knowledge of all blood lines and breeding operations in their districts. At the testing stations, which handle over 600 groups of 4 pigs each annually, pigs are fattened on a standard ration, the rate of gain and food consumption recorded, and the efficiency of the strain for export bacon and pork production determined by carcass tests after slaughtering.

The Netherlanders have perhaps gone farther than others in carcass testing; and, in addition to recording length of carcass and thickness of back fat, they now have a record of a few years for "chop percentages" or measurements of loin and back muscles. In the relatively short period since 1926 that the Netherlanders have been working on a bacon-hog type, not only have they been successful in obtaining extreme length of body, but in doing so they have not sacrificed ham and other muscular development and vital characteristics. <sup>4/</sup> The results of back-muscle tests have to date shown that medium-length carcasses produce the best meat yields. The fact that

<sup>3/</sup> At present, the Netherlands has eight testing stations, six of which test bacon hogs and the other two meat hogs.

<sup>4/</sup> It is generally conceded that hog producers in Sweden have attained greater body length in their hogs than any other group of breeders in Europe. Recently, however, the Swedes have come to the conclusion that they have sacrificed a great deal in ham development and certain vital characteristics in order to obtain this length. It is expected that in the future they will pay more attention to muscular development when selecting breeding stock.

the Netherlands have adopted chop-percentage tests and are using the results in their selection of breeding stock indicates that they will not go too far in selection for length.



Figure 5. A Netherland Landrace sow. Breeders have selected for extreme length, but in so doing they have not sacrificed muscular development and vital characteristics.

Through selection, recording performance, testing, etc., breeders have developed two breeds or strains of hogs that are well adapted to prevailing conditions. In addition to great fecundity (sows average about 12 pigs per litter and raise 10), the records of herdbook associations and testing stations show that these breeds have feeding ability and hardiness equal to the best, and superior to most, of the hogs in Europe. Since Denmark has prohibited the export of breeding stock for fear of increasing foreign competition, Netherland authorities have announced their readiness to take over the trade and export improved strains that have been developed in the Netherlands.

The extent to which breeders have used Large White blood in fat-hog production and Veredelte Landschwein blood in bacon-hog production emphasizes the importance of strain over breed and is an excellent example of what can be done along lines of selection in hog breeding in a comparatively short time.

#### Numbers and Trends

Hog production in the Netherlands, stimulated by a gradual increase in national standards of living and opportunities to export to neighboring European countries, underwent a gradual expansion from 1850 until the outbreak of the World War. Census data showing hog numbers between 1910 and 1921 are not available, but it is probable that difficulties in obtaining grain imports during the war period resulted in some contraction in hog production. By 1921, however, total numbers were larger than for any pre-war date. Further expansion took place during the 1920's; and, in the early 1930's when farmers made an effort to offset declining prices, such marked increases occurred that by September 1932 hog numbers had reached an all-time record high of 2,735,000. Since the Hog Centrale started operations, hog numbers have tended to decline and a new low of 1,343,000 was reached in February 1938.

Hog census data show a tendency toward a production cycle, but the cycle does not occur with the regularity evident in more important hog-producing countries. Most of the census data relate to the period of production control. In spite of the fact that production has presumably been limited by the earmark system and the Centrale has been successful in restoring bacon-hog export prices to a profitable level and maintaining rather stable prices for a long period, the cyclical tendencies of hog production have continued throughout the period. Limited data on feed and



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"domestic" or "fat" hog prices suggest that increases and decreases in breeding operations are largely the result of hog-feed price relationships. Another important factor that has been a contributory cause of the production cycle during the period of the Centrale operations has been the opportunity, or lack of opportunity, to market bacon hogs at the time when they are ready for slaughter. When the Centrale has been able to accept farmers' offerings promptly, an expansion in breeding operations has ensued; and when offerings could not be accepted promptly and bacon hogs had to be retained on farms, a contraction in breeding operations has always followed (see comments on price fixing on page 309).

The discouraging effect that the earmark system and inability to market hogs at bacon weights has had on breeding operations is evident from the fact that only in 1936 have earmark takings equaled the number of earmarks available. During 1936, production expanded as a result of a hog shortage and good prices in late 1935; earmarks were not equal to demand; the farmers had to destroy or dispose of a large number of unmarked baby pigs. This experience, along with difficulties in marketing bacon hogs in the summer and fall of 1936, was responsible for a marked decline in hog production in 1937.

It must be recognized, however, that throughout the operations of production control, authorities have been confronted with the problem of planning production 1 or 2 years in advance, while pork consumption, which is very elastic, was being affected by beef prices, deflation, devaluations, and other economic developments, no one knew how much bacon could be sent to England for more than 2 or 3 months ahead, and other export outlets were uncertain.

At present levels (i.e., those of early 1938), hog production is not equal to domestic demand and remunerative export outlets. It is expected, however, that this situation will be overcome through the increased breeding operations that are now taking place. It is unlikely, however, that hog production will be permitted to increase to such an extent that large and unremunerative export surpluses will occur. Efforts of the authorities probably will continue to be directed toward maintaining hog production at a level that will provide domestic pork requirements and such surpluses as can be marketed in the best interest of national economy.

## MARKETING

### Methods of Sale

Livestock markets are held 1 or 2 days each week in most of the important cities in the Netherlands. As elsewhere in Europe, the market property is maintained by the municipalities, and fees are charged sellers for use of the facilities. Markets are quite modern and the fees are reasonable. Marketing costs, exclusive of commission, which amounts to about 1 percent of sales, run about 75 cents per head for slaughter hogs. Livestock commission men operate at all important markets, but it is not compulsory for producers and traders to use their services.

The majority of slaughter hogs are bought direct from farmers and feeders by traders, butchers, or agents operating for packing plants and large wholesale slaughterers. Except for sales at Rotterdam, Amsterdam, and a few other important centers, it is probable that the bulk of sales made at public markets are feeder-pig sales. Markets that adjoin municipal abattoirs in small cities are used more as assembling points or holding pens prior to slaughter than as buying and selling places. Feeder-pig markets are of considerable importance, especially in the breeding areas in the

eastern part of the country. Methods of marketing hogs for domestic consumption have not been affected by operations of the Centrale since no control is exercised over domestic markets. Centrale influence in the fat-hog market has been confined to levying slaughter taxes and raising fat-hog prices through fixed bacon-hog prices, purchases of spek for export, and market-supporting purchases of fat hogs.

Prior to the establishment of the Centrale, each bacon factory had its own agents and buyers, who competed for hogs throughout the Netherlands, with the result that buying and transportation costs were excessive. Since the Centrale came into operation, the country has been divided into about 100 buying districts, each in charge of a district agent. Bacon hogs are taken over by the Centrale's agents at local assembling points and shipped to the nearest bacon factory in accordance with instructions from the main office at The Hague. Producers who desire to sell bacon hogs to the Centrale must notify their local agent 8 days in advance of the delivery date. As soon as the Centrale has received this information, it notifies the local agent how many hogs he can accept and to which factories they should be delivered. Factories no longer compete for supplies; they know in advance how many hogs will be received. Buying and transportation costs have been reduced, and the Centrale has also been able to secure freight-rate reductions.

### Prices

Bacon-hog prices were formerly determined by the London price for Netherland bacon. When the Hog Centrale, with power to fix prices for export bacon hogs, began operations in August 1932, bacon-hog prices were at the very low level of 8 cents per pound, live weight. The first fixed prices provided for a payment of 15 cents per pound, live weight, which was slightly under production costs as shown by the formula then used. As British bacon prices advanced with the operation of Great Britain's system of quantitative limitations of imports, it was possible further to increase prices paid to Netherland farmers for bacon hogs; and, through price fixing, bacon-hog prices have been protected from sharp fluctuations in British bacon prices. Since mid-1933, bacon-hog prices have shown an upward tendency and during most of the period have been on a profitable basis for farmers.

Prices for fat hogs have not been fixed or subjected to direct control, but they have been influenced by the fixed bacon-hog prices and the Centrale's market-supporting purchases of hogs and export spek. They, too, have shown an upward tendency. But with bacon-hog prices fixed and with the number of hogs that could be marketed at bacon weights limited at times by export outlets, fat-hog prices have had to bear the brunt of supply and demand influences that operate on Netherland markets; and at times they have shown violent fluctuations. Indeed, seasonal fluctuations in fat-hog prices have been even greater than before fixed bacon-hog prices were adopted; and, while the price tendency has been upward, the one-sided control has not produced the most desirable results.

Under the Netherland system, bacon-hog prices (and also fat-hog prices when authorities wish to intervene) have been prevented from declining, but no attempt has been made to prevent price increases arising from domestic supply and demand conditions. In 1937, when seasonally reduced deliveries and increased domestic demand brought about sharp increases in fat-hog prices, all control over export bacon-hog prices was lost, supply and demand determined all hog prices, and heavy losses were sustained by the Centrale on bacon exports.

The weakest point in the Netherland hog price and marketing system, aside from the absence of fat-hog price control, has been the Centrale's inability to take



all of the bacon hogs that farmers wished to sell at the time they were offered. The Centrale's takings at first were dependent on export-bacon outlets; and, when all hogs offered could not be taken, they accumulated on farms, exceeded bacon weights, and became fat hogs. The bacon-hog surpluses, which developed into unseasonal fat-hog surpluses or accentuated seasonal surpluses of fat hogs, had a depressing effect on fat-hog prices and temporarily reduced the support that fixed bacon-hog prices could give to fat-hog prices. On several occasions when fat-hog surpluses were burdensome, the Centrale made market-supporting purchases of fat hogs, stored the carcasses, and later sold them in such foreign outlets as could be found. Since 1936, the Centrale has found it expedient to take the surplus as it appeared in the form of bacon hogs.

The outstanding development of the Centrale's price and market operations has been the introduction of a system whereby bacon hogs are bought on a dead-weight and quality basis. Formerly, bacon hogs were purchased on a live-weight basis at shipping points, and little consideration was given to quality of the bacon carcass. Payment on a dead-weight-quality basis was introduced early in 1933, bacon factories determining grades by carcass weight and thickness of back fat. Later, length measurements, i.e. from pubic bone to the first rib, were incorporated in bacon-quality determinations.

Largely as a result of payment on a dead-weight-quality basis, the interest of farmers in breeding and selection has increased, and a marked improvement has occurred in the quality of Netherland bacon. The percentages of all bacon hogs represented by first-quality hogs bought for the account of the Centrale has increased as follows:

1933	-	31.9 percent
1934	-	33.5 percent
1935	-	37.5 percent
1936	-	41.9 percent
1937	-	46.1 percent

Perhaps the greatest measure of the improvement in bacon is the fact that during 1932 Netherland bacon sold in Great Britain at an average of 7s.0d. per hundred-weight less than Danish, whereas during 1937 it averaged only 3s.3d. less. Efforts are being made to introduce a system of quality payments for other than bacon hogs, and the recently acquired data on chop percentages will doubtless be useful in arriving at a base for making payments by grade.

#### SLAUGHTER AND PROCESSING

Municipal abattoirs are maintained at all important cities and towns in the Netherlands, where wholesale and retail butchers may, on payment of prescribed fees, use the slaughter facilities. All abattoirs are equipped with refrigerator space and have adjoining market halls for wholesale meat transactions. Processing beyond the making of wholesale cuts is usually done on the butchers' own premises, but at certain abattoirs equipment for processing fats and entrails has been installed and is used by companies that buy fats and offals from the smaller killers. In addition to the municipal abattoirs, there are about 22 packers or large slaughterers who have their own plants and prepare all kinds of fresh and conserved meats. Killing equipment in the Netherlands is modern, premises are kept in a clean and sanitary condition, and health inspection service is required and maintained for all meats for human consumption, including that for export.

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In addition to commercial slaughter, noninspected home slaughter since 1930 has varied from 259,000 to 395,000 hogs per year. Home slaughter is always highest during the last quarter of each year. Beginning in early October, each year more than 10,000 hogs are killed weekly by farmers for their own consumption. Annual fluctuations are shown in table 1.

Table 1. Annual hog slaughter in the Netherlands, 1930-1937

Year	For home consumption			For export	Total
	Inspected	Non-inspected	Total a/		
	Number	Number	Number	Number	Number
1930.....	1,257,829	291,046	1,548,875	1,203,360	2,752,235
1931.....	1,771,971	395,426	2,167,397	1,499,197	3,666,594
1932.....	1,830,938	395,631	2,226,569	1,328,413	3,554,982
1933.....	1,408,325	259,145	1,667,470	1,108,469	2,775,939
1934.....	1,412,491	303,023	1,715,514	830,454	2,545,968
1935.....	1,166,413	269,453	1,435,866	580,027	2,015,893
1936.....	1,307,074	287,728	1,594,802	523,147	2,117,949
1937.....	1,200,754	268,349	1,469,103	475,163	1,944,266

Nederlandsche Veehouderijcentrale. a/ Export spek and other prepared pork products are taken from hogs slaughtered for home consumption.

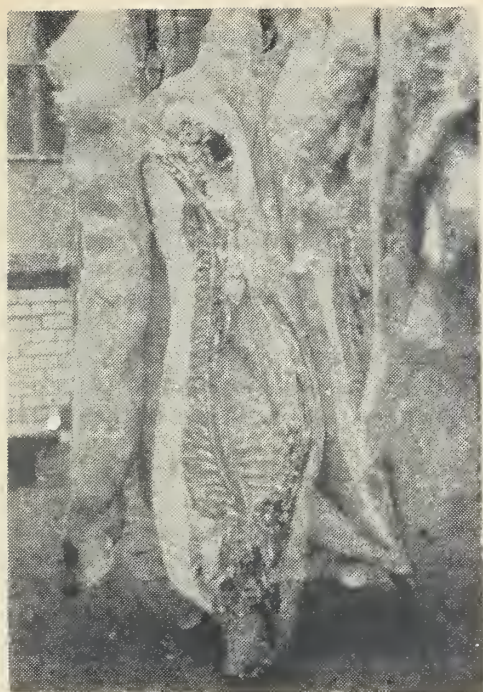
#### For the Home Market

Most of the hogs slaughtered at abattoirs in the large cities are heavy butcher hogs, those killed at The Hague averaging about 440 pounds, live weight, those at Rotterdam and Amsterdam, from 350 to 400 pounds. Export spek is taken from the carcasses of heavy hogs, and meat from these hogs is preferred among laboring classes in industrial areas. Lighter-weight meat and fat hogs go to the smaller cities and to packers. Lighter carcasses are trimmed to some extent, but most retail cuts made from carcasses weighing up to 265 pounds carry more fat than is customary in the American retail trade. Except for heavy-hog carcasses, from which export spek has been removed, both wholesale and retail cuts of pork in the Netherlands are similar to those in the United States. Netherland packers make all kinds of sausages and preserved and tinned meats, and in recent years have greatly increased the production of tinned-pork, especially boneless hams and picnics.

Export spek takes most of the fat surplus from heavy hogs, the spek yield amounting to from 30 to 35 percent of the dressed carcass weight. Export spek weighs more than 40 pounds per piece, but spek weighing less than 40 pounds and more than 30 pounds per piece goes to the domestic trade as "Geldersh spek." Since little trimming is done on lighter carcasses, lard production in the Netherlands is relatively low when average slaughter weights and the finish of the majority of hogs for domestic consumption are considered. A small amount of open-kettle-rendered lard is made by companies at some of the larger abattoirs and at some packing plants. Like most continental lards, that rendered in the Netherlands does not have the most acceptable color, taste, and keeping qualities. It goes mostly to the home trade, making up about 40 percent of the lard offered on domestic markets, but some is exported to Germany. The larger packers also make a small amount of refined lard, most of which is exported to England.

Handling and processing of byproducts, because of the small units is inferior to that in the United States. Since the war, however, one of the larger packers has





Figures 6 and 7. Side and back views of carcasses from 440-pound Netherland Large White hogs at the municipal abattoir, The Hague.

established a pharmaceutical laboratory and plant which is one of the first and largest of its kind in Europe.

#### For Export

Sixteen bacon factories were in operation in the Netherlands in 1937; all of them were established prior to the adoption of crisis legislation. Twelve are privately owned and operate in connection with packing plants; the other four are cooperatives. The bacon factories are located principally in the eastern part of the country where bacon-hog production is most important. The Danish method of making Wiltshire sides is followed. The hogs are stunned with an electric knocker, stuck, dehaired, singed to harden the hide, the head and feet removed, the backbone taken out, and the carcass split into two sides. The cure is a mild continental 5-day cure, with hams and shoulders pumped. Bacon is shipped to England green.

Since the Centrale began operation in August 1932, all bacon processing for export has been done for account of the Centrale. At first, the Centrale entered into contracts with existing establishments whereby the factories made the bacon from hogs delivered to



Figure 8. Export spek cut from fat-hog carcasses. The spek is not cured, but is chilled, sometimes frozen, and kept under refrigeration.



plants by the Centrale, which paid fixed costs, operating costs, and a profit, and furnished salt and wrappers. Average costs to the Centrale under this system worked out higher than actual costs of the most efficient processors, and downward adjustments in payments were effected, which made the costs of the Centrale vary from Fl.1.30 to 1.75 per 100 kilograms (from about 32.8 to 44.1 cents per 100 pounds), bacon weight. Subsequently, the Centrale asked for bids from the factories and adopted the lowest bid - Fl.0.99 per 100 kilograms (25 cents per 100 pounds) - as the price to be paid for bacon manufacture. Only the most efficient factories could operate at this price, and some had to close. Some bids covering a period in early 1937 were as low as Fl.0.89, and as a result four factories handled 80 percent of the bacon. In late 1937, the Centrale returned to the practice of distributing the work to all factories and again adopted an average-cost basis, the payment for processing being fixed at Fl.1.65 per 100 kilograms (around 41.6 cents per 100 pounds). It is apparent that Netherland processing costs are among the lowest in Europe.

#### DIETARY HABITS AND CONSUMPTION

Pork is the most important meat in the Netherland diet, but pork consumption is very elastic and is greatly influenced by prices and supplies of pork and competitive meats. Low beef prices and high pork prices have combined to reduce per-capita consumption in recent years; and, even though total hog production has been declining, reduced consumption has, at times, been one of the factors necessitating the disposal of the surplus pork on unremunerative foreign markets.

Per-capita consumption is highest in rural areas and lowest among the better classes in cities. Seasonal demand for pork is, of course, greatest during the winter and smallest during the summer months. The larger part of hog production is consumed within the Netherlands, and as production has contracted the percentage retained for domestic consumption has increased.

Most of the pork is consumed in fresh form, and until recently cured-pork consumption was small. During the past few years, in which disposition of pork surpluses has been difficult, packers have tried to stimulate sales and consumption by processing an increasing quantity of pork in a great variety of canned, preserved, and prepared forms, and the consumption of such pork has increased.

Table 2. Hog slaughter in the Netherlands and percentages used for home consumption and for export, 1928-1937

Year	Slaughter	Percentage for	
		Home consumption	Export
	<u>Number</u>	<u>Percent</u>	<u>Percent</u>
1928.....	3,088,811	50.36	49.64
1929.....	2,416,259	55.10	44.90
1930.....	2,752,235	56.28	43.72
1931.....	3,666,594	59.11	40.89
1932.....	3,554,982	62.63	37.37
1933.....	2,775,939	60.07	39.93
1934.....	2,545,968	67.39	32.61
1935.....	2,015,893	71.20	28.80
1936.....	2,117,949	75.30	24.70
1937.....	1,944,266	75.55	24.45



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High consumption of fat pork results in relatively low consumption of lard in households. Some home-rendered lard is used in rural sections, and a small amount of rendered and refined lard is used as a cooking fat and shortening agent in cities. Beef suet, mostly imported from South America, is said to be used more extensively than lard in certain districts, and competition from vegetable oils, marine oils, and margarine produced by the well-developed margarine and oil industries has increased. With the marked expansion in production of margarine, cooking oils, and other artificial fats, the majority of consumers, who formerly preferred the taste of a hog fat, have learned to like fats with a neutral taste. This change is particularly noticeable in the baking industry, formerly one of the principal consumers of refined lard in the Netherlands. The place of refined lard in this industry has been taken by "bakers' fat," a product made from whale and vegetable oils. In addition to fat pork, margarine, and cooking fats, the Netherlands consume relatively large quantities of butter and cheese.

#### IMPORTS AND EXPORTS

Imports of pork products for consumption in the Netherlands have never assumed important proportions, although in the immediate post-war years, when Europe was still fat-hungry, an increase in imports of American refined lard, principally for use by the baking trade, took place. Imports of animal fats for industrial uses or for further processing in the Netherlands were formerly important, but this trade has declined with the expansion in vegetable- and marine-oil processing, the imposition of import-license fees, and the reduced hog production in the United States.

Due to the country's location with regard to ports and inland waterways that serve Central European deficit hog and fat areas a considerable transit trade in American pork products was formerly conducted through Netherland ports. Most of the transit products were directed to industrial areas in the Rhineland. Since 1933, however, this trade has dwindled as German exchange difficulties and restrictions placed on imports of Western Hemisphere pork and fats have increased.

The principal pork-product exports have been bacon for Great Britain and spek for Germany, and in recent years these two have made up about 90 percent of total pork-product exports from the Netherlands. As a bacon supplier for the British market, the Netherlands ranks second among non-Empire countries, having been granted 9.5 percent of the foreign import quota. Spek from the Netherlands accounted for over 80 percent of Germany's spek imports during the period 1932-1936. Formerly, exports of live hogs and carcasses to France, Belgium, and Luxemburg were important, but with the growth of nationalism in these countries the trade has declined to minor proportions.

Trade with other foreign countries has been neither regular nor well developed; and, since the adoption of crisis measures, it has consisted largely of exporting all possible quantities of the Netherland surplus whenever it could be sold.

Control over the quality and uniformity of bacon exported to Great Britain is maintained by an official agency, the Bacon Export Control Board. This board antedates the Centrale, but the two work in close cooperation, as can be seen from the fact that the same official serves as secretary of each. The Board is charged with preventing the export of inferior or undesirable bacon, which might prejudice the good name of Netherland bacon on British markets. Board inspectors operate both in England and in the Netherlands, and funds for their activities are obtained from a tax of 3 cents (about 1.7 United States cents) per head on hogs exported as bacon.

Table 3. Exports of hogs and pork products from the Netherlands, 1931-1936

Item	1931	1932	1933	1934	1935	1936
	<u>1,000 pounds</u>	<u>1,000 pounds</u>	<u>1,000 pounds</u>	<u>1,000 pounds</u>	<u>1,000 pounds</u>	<u>1,000 pounds</u>
Bacon.....	111,540	109,913	101,883	68,168	57,888	55,494
Fresh pork.....	76,085	46,464	31,718	1,175	1,576	2,282
Salted pork or spek.....	32,981	58,517	31,870	28,563	19,650	14,652
Smoked or dried pork....	4,599	5,626	2,868	895	467	516
Pure lard or steam lard.	60,349	37,101	25,355	16,986	32,491	20,029
	<u>Head</u>	<u>Head</u>	<u>Head</u>	<u>Head</u>	<u>Head</u>	<u>Head</u>
Hogs.....	17,451	37,427	7,674	6,457	824	2,360

Compiled from data furnished by the American consulate at Rotterdam.

### CONCLUSIONS

The Netherlands has developed one of the most efficient hog industries in Europe. Efficiency, together with comparatively low processing costs of the packing and bacon-curing industries, would make certain Netherland pork products highly competitive in free and unrestricted markets. Growth of nationalism and the development of trade restrictions in deficit hog countries of Europe prompted the Netherland Government to adopt a program curtailing hog production and limiting pork production approximately to those quantities that could still be remuneratively marketed at home and abroad. Despite the curtailment and discouragement of surplus production, the efficiency of the hog industry has further improved during the control period.

While control is exceedingly objectionable to efficient livestock producers, it is apparent that the crisis measures - particularly price fixing - have been important factors in assisting Netherland hog producers through a difficult period. The effect that high domestic price levels and monetary policies might have had on exports has been overcome by subsidies, the burden of which has been borne by consumers. How long world conditions will justify the curtailment of efficient production and encouragement of inefficient production remains to be seen.

The Netherland hog industry, however, has been brought through a crisis period in a much improved condition and is today in a position to expand rapidly and take advantage of any worth-while export opportunities that may develop. And, should further contraction take place in world trade, the Netherlands has, in the control measures, what appears to be the means of preventing that contraction from having serious repercussions on the domestic hog industry.

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## ARGENTINE WHEAT

By Paul O. Nyhus\*

Argentina is regularly exceeded by a number of countries in the production of wheat, but during the past 5 years it has ranked second only to Canada in the volume of wheat exported. During that period, exports averaged 137 million bushels annually. Commercial wheat production in Argentina is confined to a relatively small area, almost wholly within 150 miles of the principal export ports. No significant change has taken place in the Argentine wheat acreage since 1930, and no large undeveloped areas remain that are suitable for wheat production. Expansion of the wheat acreage, therefore, could occur only at the expense of other agricultural enterprises, particularly of livestock raising. Storage facilities in the interior of the Wheat Belt are very limited and practically all of the grain is sacked for shipment.

### TRENDS AND PRESENT EXTENT OF CROP ACREAGES

Acreages devoted to wheat, corn, flaxseed, and barley in Argentina declined precipitously immediately after the World War, reaching a low of 26,096,000 acres in 1921-22. See table 1. Immediately thereafter, however, the areas devoted to these crops expanded steadily, the period of most rapid expansion having been during the 9 years ended with the 1930-31 season when the area reached 43,991,000 acres. Since 1930-31, no significant upward or downward trend has been noted in the total area devoted to these crops, although there have been acreage shifts between the individual crops.

The sharp expansion in the acreage of these crops from 1922-23 to 1930-31 is attributed primarily to high prices for wheat and other grains in the post-war period and in part to the greater use of combines. Wheat prices in those years varied mostly from 11 to 13 pesos per 100 kilograms.<sup>1/</sup> These were extremely profitable prices and were much better relatively than the prices for livestock products, although the latter were also high.

In Argentina, 10 pesos per quintal for wheat is considered an attractive price. Because of the unprecedented levels reached by cash and share rents during the several years of such prices, more and more grazing lands were turned over to tenant grain farmers. Reductions in costs of harvesting by the use of combines enabled tenants to increase their acreages and to seek additional lands for wheat. Undoubtedly the greatly increased importation of combines during this period was more a result than a cause of the expansion. Imports of combines increased from 1,112 in 1921 to 7,700 in 1924 and finally to about 15,000 in 1929.

\* Agricultural Attaché, Buenos Aires, Argentina.

<sup>1/</sup> A kilogram is equivalent to 2.2046 pounds; at official rates of exchange prevailing during the period in question, the value of a paper peso varied between 34.38 and 42.45 United States cents.

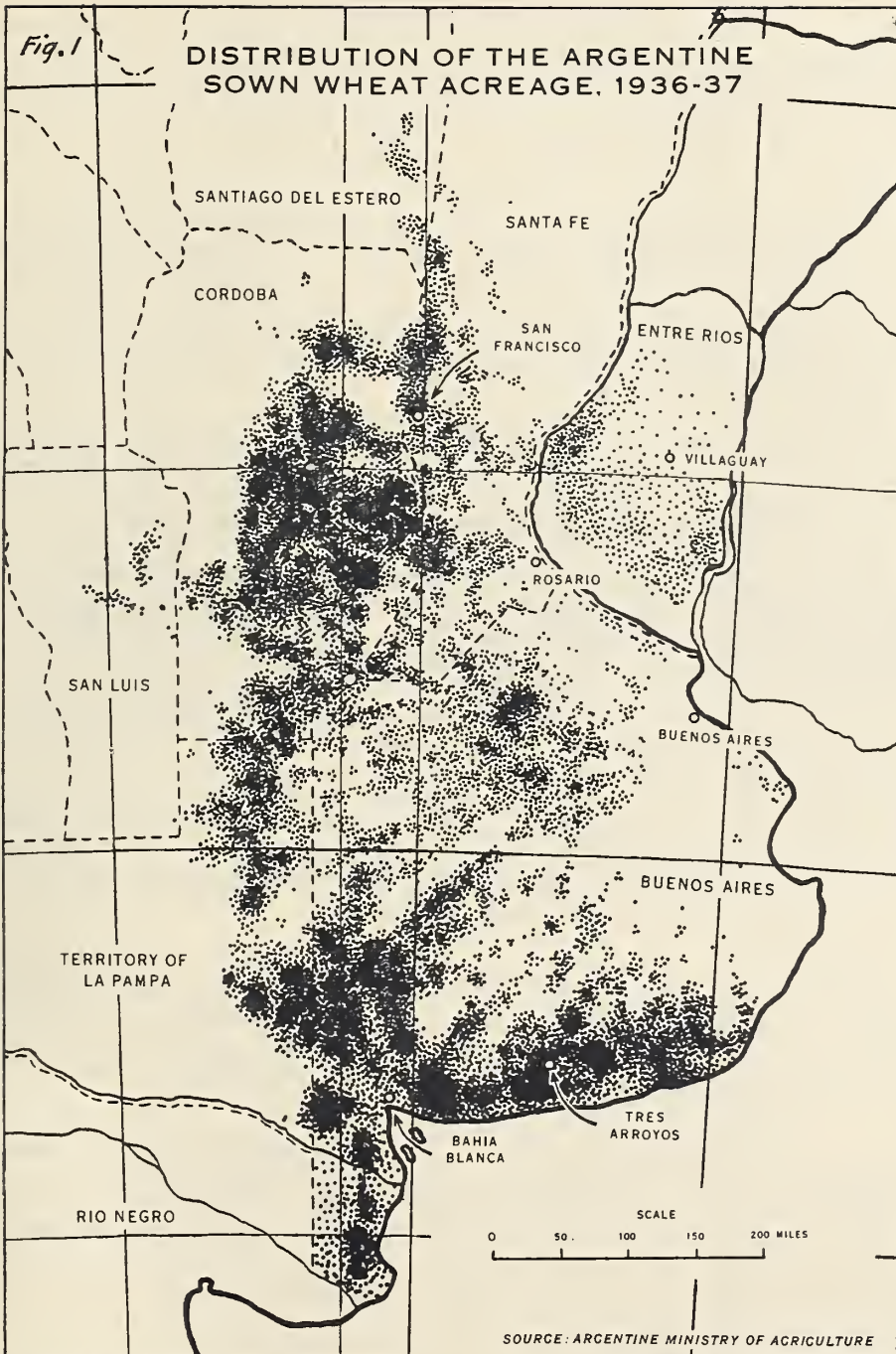
Grain and wheat prices dropped sharply in the latter part of 1930 and for several years remained between 5 and 7 pesos per 100 kilograms - about half the previous post-war level. The status of grain farming versus grazing was thereby completely changed, and expansion of grain acreage was brought to a sharp halt. Since 1930, with the possible exception of the last 2 years of better grain prices, the estancias or grazing lands have fared relatively better than the grain farms.

Forces are slowly at work tending to increase the grain acreages on estancias, to convert grazing tracts into grain lands, and to divide the large landholdings. Close observation of the agriculture of Argentina since 1930 indicates, however, that, while shifts are taking place under current price relationships in the acreages of each of the three leading crops (wheat, corn, and flaxseed), a considerable degree of stability has been maintained in the total crop acreage. The sown acreages of the leading crops in Argentina in 1937-38 were, for wheat, 18,908,000; for corn, 15,185,000; and, for flaxseed, 7,023,000 acres. During the 1929-30 crop year, the areas were as follows: wheat, 20,474,000; corn, 13,955,000; and flaxseed, 7,091,000 acres.

Table 1. AREA PLANTED TO WHEAT, CORN, FLAX, AND BARLEY IN ARGENTINA, 1912-13 to 1937-38

YEAR	WHEAT	CORN	FLAX	BARLEY	TOTAL
	<u>1,000 ACRES</u>	<u>1,000 ACRES</u>	<u>1,000 ACRES</u>	<u>1,000 ACRES</u>	<u>1,000 ACRES</u>
1912-13 .....	17,095	9,464	4,695	267	31,521
1913-14 .....	16,243	10,260	4,532	418	31,453
1914-15 .....	15,471	10,386	4,258	397	30,512
1915-16 .....	16,420	9,928	4,001	431	30,780
1916-17 .....	16,089	8,969	3,207	388	28,653
1917-18 .....	17,875	8,715	3,234	604	30,428
1918-19 .....	16,976	8,252	3,419	615	29,262
1919-20 .....	17,408	8,184	4,364	669	30,625
1920-21 .....	15,014	8,090	4,769	617	28,490
1921-22 .....	14,240	7,343	3,892	620	26,095
1922-23 .....	16,254	7,851	4,317	599	29,021
1923-24 .....	17,177	8,489	5,391	685	31,742
1924-25 .....	17,792	9,162	6,323	824	34,101
1925-26 .....	19,197	10,618	6,201	900	36,916
1926-27 .....	19,274	10,598	7,288	979	38,139
1927-28 .....	20,690	10,739	7,055	1,186	39,670
1928-29 .....	22,780	11,831	6,943	1,342	42,896
1929-30 .....	20,474	13,955	7,091	1,450	42,970
1930-31 .....	21,283	13,776	7,511	1,422	43,992
1931-32 .....	17,295	14,468	8,640	1,439	41,842
1932-33 .....	19,790	14,539	7,401	1,554	43,284
1933-34 .....	19,662	16,096	6,853	1,783	44,394
1934-35 .....	18,812	17,368	8,102	2,014	46,296
1935-36 .....	14,208	18,854	6,573	1,940	41,575
1936-37 .....	17,502	16,047	7,438	1,925	42,912
1937-38 .....	18,908	15,185	7,023	1,942	43,058





## THE CEREAL AND LIVESTOCK ZONE

The wheat acreage of Argentina is concentrated largely in a central productive region generally referred to as the cereal and livestock zone. While this zone is the leading crop and livestock region, it comprises less than one-fourth of the country because of the large amount of comparatively arid land not susceptible of easy development.

Encircling this central productive zone on three sides are regions of low agricultural value or undeveloped lands. Patagonia to the south, which comprises another one-fourth of the total area of the country, is too arid to support more than a scant sheep population except in small districts where irrigation makes fruit growing possible. To the west and northwest, mountains and scant rainfall greatly reduce the carrying capacity of pastures and practically confine the cultivation of crops to irrigated districts of limited extent.

To the north, the semitropical Chaco remains comparatively uncultivated and undeveloped, though there has been a recent colonization movement and some expansion of the cotton acreage. To the northeast, the land is similarly undeveloped, and the excessive rainfall and a rolling topography will probably restrict its utilization chiefly to rice, pastures, and tree crops. The Chaco and the northeastern parts of the Republic undoubtedly have agricultural possibilities but, to date, with the comparatively small rural population of 5 million people, there has been little occasion to clear land of timber or to make any special effort toward bringing the less productive and less advantageously situated land into cultivation.

The cereal and livestock zone is of rectangular shape, 575 miles north and south and 360 miles east and west. It includes practically all of the Provinces of Entre Ríos, Santa Fé, Córdoba, Buenos Aires, and a small part of the Territory of La Pampa. It compares in size with the combined area of Illinois, Iowa, and Missouri. Almost the entire zone is extremely flat - the word "Pampa" meaning "prairie" - and hills in one or two places are landmarks. Trees and wood lots are confined to parks, lanes, and rows of trees set out by hand along boundary lines. Except for comparatively small amounts of wet and swampy lands, almost the entire region is tillable.

Possibly one of the most distinctive features of this zone is the great variation, considering the size of the area, in the amount and seasonal distribution of the rainfall. The annual precipitation ranges from 18 inches on the western edge to more than 40 inches in Entre Ríos on the eastern side, a distance of only about 360 miles. In the United States similar, though less exaggerated, variations occur in Kansas.

The cereal and livestock zone is also characterized by a wide range in temperature conditions. The differences in prevailing temperatures from the northern to the southern limits of the zone result partly from the fact that it extends through 9 degrees of latitude (from 30 in the north to 39 in the south) and from the differences in the distances of the various parts of the zone from the Atlantic Ocean. As a result of these factors, cotton is grown in the northern and oats and barley in the southern parts of the zone.

No soil surveys have ever been made in Argentina, but some generalizations for the cereal and livestock zone are possible. A central region in that zone, on which the corn acreage is concentrated, consists of a fertile black silt soil, 2 feet in depth, overlying a brown subsoil about 6 feet in depth. It is recognized as one of the best soil types in the world. To the north of this central region, the soils



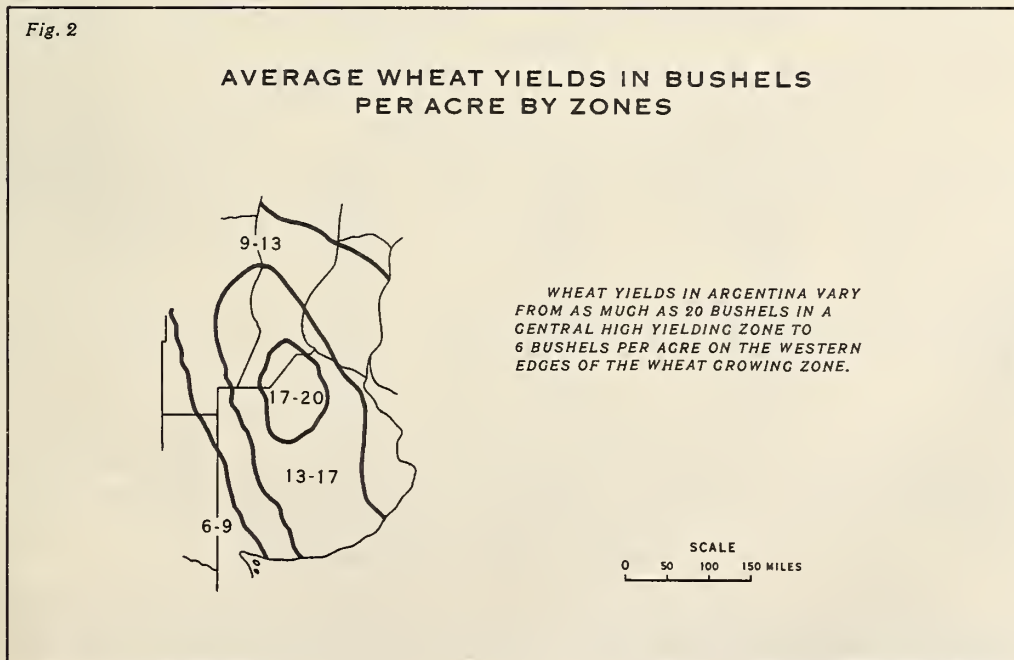
contain somewhat more clay and are less friable, but nevertheless very fertile and productive. To the west and southwest in the Province of Córdoba, the soils are lighter both in texture and in color - in some places sandy - and lack the fertility and capacity of almost continuous grain cropping of the two previously named soils.

To the southwest, in the Province of Buenos Aires and in the Territory of La Pampa, the soils become progressively sandier and poorer. In the eastern part of the Province of Buenos Aires, there are low, poorly drained soils and, in the south, black prairie soils, impaired in many places by the nearness to the surface of underlying limestone rock.

These broad aspects of the climatic and soil conditions prevailing in the cereal and livestock zone of the Argentine can be said to underlie the variations in yields, regional specialization in crop production, and pasture conditions characteristic of that zone. With this background, an attempt may be made to examine the wheat yields and to analyze livestock competition and other factors affecting the position of wheat in Argentine agriculture.

#### SHARP DECLINES IN WHEAT YIELDS PROCEEDING WESTWARD

Considering the limited geographical extent of the Argentine wheat-growing region, the yields of wheat show a surprising variation, although the trend of all yields is upward because of the use of improved varieties. The wide variations in yields of wheat account for the sharp differences in the relative advantages of competitive crops. Figure 2 gives average wheat yields on the sown acreage by regions for the 6 years, 1929-30 to 1934-35.



The highest yields per acre in Argentina are obtained in a central region located in the northern part of the Province of Buenos Aires and the southern part of the Province of Santa Fé. The average varies from 17 to 20 bushels per acre. A second high-yielding zone, in which yields average around 14.5 bushels per acre, extends about 50 miles east and west, and from 100 to 150 miles north and south, from this central high-yielding region.

High yields are dependable in these regions. In good years, average county yields of from 22 to 25 bushels are obtained in the region of highest yield and from 18 to 21 bushels per acre in the adjoining region. In both areas, yields of from 35 to 40 bushels per acre are frequently reported. Because of the relatively small acreage of wheat in the region of highest yields, the influence of that region on total production is not great. A large wheat acreage, however, is planted in the region where yields average from 13 to 17 bushels per acre. Year in and year out, the latter region is the mainstay of the Argentine wheat crop.

For a distance of about 120 miles to the west and southwest of the two high-yielding regions, yields decline progressively, first to a zone where they average from 9 to 13 bushels per acre and then to one where as few as 6 bushels are obtained. This progressive decline in yields per acre becomes especially sharp proceeding toward the west and southwest in the Province of Buenos Aires. Associated with the low yields in these areas are frequent years when a considerable acreage is not worth harvesting. The average abandoned acreage in the region of lowest yield is from 15 to 20 percent. The average sown acreage in each of these low-yield areas is about 5,000,000 acres, or 25 percent of the total Argentine wheat acreage, but these areas are of much less importance in production.

Variations in yields from year to year and differences in yields by regions are reflected in more detail in table 2.

Table 2. REPRESENTATIVE COUNTY YIELDS PER ACRE OF WHEAT IN ARGENTINA,  
1929-30 to 1934-35

YEARS	YIELD REGION				
	HIGHEST	SECOND HIGHEST		THIRD HIGHEST	LOWEST
	CHACABUCO	MARCOS JUAREZ	TRES ARROYOS	JUAREZ CELMAN (La Carlota)	PUAN (Darragueira)
	BUSHEL	BUSHEL	BUSHEL	BUSHEL	BUSHEL
1929-30 .....	14.7	9.2	13.8	6.1	1.8
1930-31 .....	19.0	15.8	13.5	9.7	7.3
1931-32 .....	20.4	16.8	14.0	14.6	5.1
1932-33 .....	19.3	17.8	13.4	11.2	10.1
1933-34 .....	22.0	22.0	18.1	14.7	11.6
1934-35 .....	16.4	13.4	13.4	8.5	12.0
Average ....	18.6	15.8	14.4	10.8	8.0

Reports of Bureau of Rural Economy and Statistics, Argentine Ministry of Agriculture.

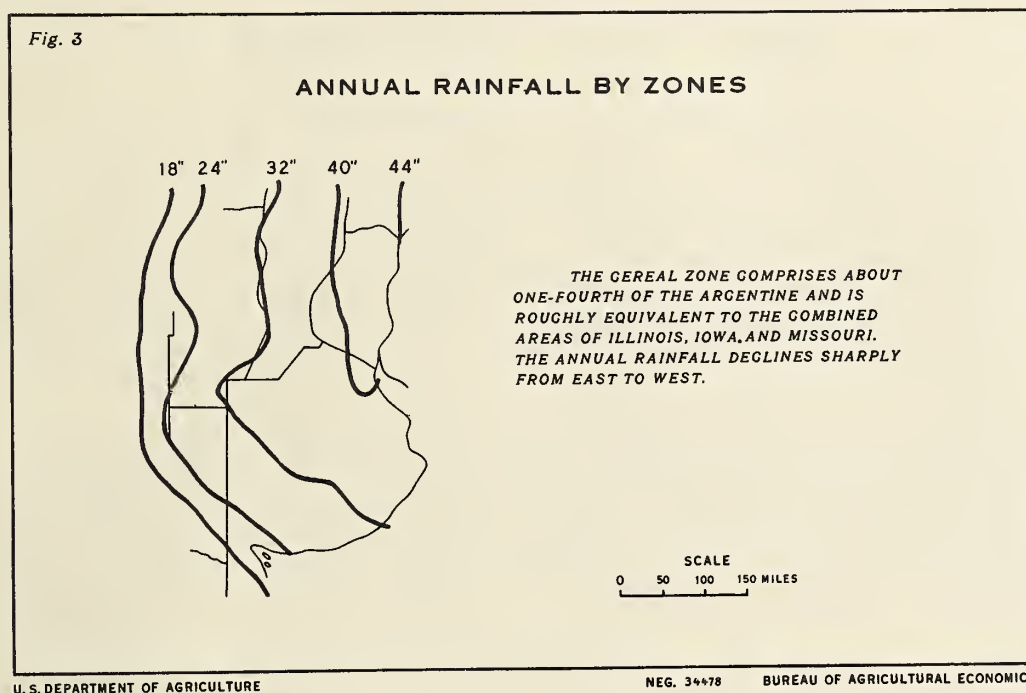
#### FACTORS AFFECTING WHEAT YIELDS

Outstanding among the factors affecting wheat yields in Argentina are the differences in rainfall, temperature, and soil conditions in various parts of the country. Plant diseases and insect pests are of little significance.



## Rainfall and Temperature

Reference has been made to the progressive decrease in the annual rainfall from 40 inches on the eastern side of the cereal and livestock zone to 18 inches on the western edge, a decline of 22 inches over a distance of 350 miles. The decline is shown in figure 3. The actual amount of the annual precipitation, however, is not of as much significance as its seasonal distribution combined with prevailing temperatures.



In Entre Ríos and on the eastern side of the Province of Santa Fé, the rainfall averages from 40 to 44 inches per annum. Excessive precipitation in the spring of the year, however, largely accounts for the low yields per acre obtained in that part of the cereal and livestock zone.

The annual rainfall in the western and southwestern parts of the cereal and livestock zone ranges from 20 to 30 inches. Although this would appear sufficient, about half of the rainfall in the western parts of this zone normally occurs during the summer months of high evaporation, which reduces its effectiveness.

In the western part of the zone, the total rainfall during the dormant period of 5 months in the later winter and early spring (April-August) is only from 4 to 6 inches. After a dry period of this length, failure to receive spring rains in late September and in October often results in irreparable damage to the wheat crop. The high winds that sweep the western regions of the cereal and livestock zone intensify the injury. Occasionally in June and July the surface soil dries to such an extent that it becomes too dry to sow wheat or too dry for sown wheat to germinate. This was the cause of sharply reduced sowings in the Province of Córdoba in 1935 and again in 1937. By the time sufficient rains occurred, it was too late to make a crop.

Table 3. Average rainfall and normal temperatures for selected stations in Argentina

Station	Province	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
<u>RAINFALL</u>		<u>In.</u>	<u>In.</u>	<u>In.</u>	<u>In.</u>	<u>In.</u>	<u>In.</u>	<u>In.</u>	<u>In.</u>	<u>In.</u>	<u>In.</u>	<u>In.</u>	<u>In.</u>	<u>In.</u>
East:														
Villaguay ...	Entre Ríos	3.3	3.1	4.9	5.2	3.0	1.7	1.5	2.8	4.0	3.0	4.1	4.0	40.7
Rosario .....	Santa Fé	3.4	3.4	4.1	5.0	2.1	1.3	1.3	1.9	2.8	3.4	4.3	4.4	37.4
Chivilcoy ...	Buenos Aires	2.6	2.7	4.6	4.4	2.7	1.4	1.4	1.9	2.7	2.9	4.3	3.4	35.1
Intermediate:														
San Francisco	Córdoba	3.8	3.8	3.8	3.4	1.8	0.7	0.7	1.3	2.2	2.9	3.9	4.7	33.1
Rufino .....	Santa Fé	4.0	3.0	4.4	3.4	1.6	0.8	1.2	1.1	1.4	3.6	4.6	4.6	33.7
Tres Arroyos.	Buenos Aires	2.7	3.5	2.8	3.0	1.7	1.5	2.0	1.3	2.0	2.2	2.7	3.6	28.8
West:														
Villa María	Córdoba	3.3	3.0	3.3	3.1	1.1	0.4	1.0	0.8	1.2	3.1	3.6	4.6	28.5
Gral. Pico ..	La Pampa	3.5	4.0	3.5	2.6	1.4	1.0	1.4	1.3	1.5	3.1	3.3	3.7	30.0
Darragueira .	Buenos Aires	2.4	3.8	3.0	2.1	1.3	0.6	0.9	1.1	1.6	3.3	2.7	3.1	26.1
Bahía Blanca.	Buenos Aires	2.0	2.9	2.6	2.6	0.9	0.7	1.4	0.9	1.5	2.3	1.9	2.4	22.6
<u>TEMPERATURE</u> (Fahrenheit)		<u>De-</u> <u>grees</u>	<u>De-</u> <u>grees</u>	<u>De-</u> <u>grees</u>	<u>De-</u> <u>grees</u>	<u>De-</u> <u>grees</u>	<u>De-</u> <u>grees</u>	<u>De-</u> <u>grees</u>	<u>De-</u> <u>grees</u>	<u>De-</u> <u>grees</u>	<u>De-</u> <u>grees</u>	<u>De-</u> <u>grees</u>	<u>De-</u> <u>grees</u>	<u>De-</u> <u>grees</u>
San Francisco	Córdoba	58	56	54	50	46	42	42	44	46	50	53	58	-
Junin .....	Buenos Aires	56	55	-	49	45	42	41	42	46	48	52	-	-
Guamini .....	Buenos Aires	56	54	51	47	43	40	39	41	44	47	51	56	-
Tres Arroyos ..	Buenos Aires	54	54	51	47	43	40	39	40	43	45	49	54	-

Régimen Pluviométrico de la R. Argentina and Anales de la Dirección de Meteorología, issued by the Weather Bureau of the Argentine Ministry of Agriculture.



Under conditions of from 20 to 30 inches of annual rainfall and the seasonal distribution as described, the crop in the southwest depends greatly on reserve soil moisture accumulated especially in March and April. Usually, plowing is done too late by farmers in this region to conserve adequately the summer and autumn rains. The practice of plowing immediately after the harvest, however, is becoming more general, and there are some instances of fallowing land for wheat.

In the Tres Arroyos district on the southern coast of the Province of Buenos Aires, spring rains and moisture conditions generally are much more dependable. As a result, yields are relatively more reliable than they are in most other parts of the cereal and livestock zone.

In the northern half of the zone, it is possible that rainfall is not so much of a limiting factor on yields as are high spring temperatures. In fact, correlation studies of climate and yields of wheat for the entire country indicate a fairly close relationship between low average temperatures and high yields, and vice versa. In the north, wheat is sown in June and July and matures, therefore, early enough to escape the high temperatures of December. Late sowings, or maturity in December, are hazardous in this region because of the temperature condition termed "golpe de sol" - literally sun stroke. This is a combination of high temperatures with heavy dew while the grain is filling. It checks the development of the grain and affects the yields and quality of the crop.

Seeding of winter varieties in the southwest begins in April, but with shorter-season varieties it continues into June. Harvesting is under way about Christmas time and here, as in the north, late sowings frequently suffer from high January temperatures. Frost injury frequently occurs in October and November in the Province of Buenos Aires and in the Territory of La Pampa. A small amount of frost damage in limited areas is not unusual, but the injury in 1937 was very extensive over a large area because there were four or five frosts, all capable of doing damage depending upon the stage of development of the plants.

The monthly rainfall and temperature data for representative stations located in the eastern, intermediate, and western parts of the cereal and livestock zone are given in table 3.

#### Soil Conditions

Soil differences also account for variations in wheat yields. A zone of deep, black, prairie soils centering around Rosario is not especially suitable for wheat. Farmers contend that wheat grows too rank in this soil. It is almost ideal, however, for corn and flax. In general, proceeding to the west and southwest away from these deep, black, prairie soils, the soils become lighter in color, sandier in texture, and poorer in fertility. There is a large amount of inferior sandy loam and sandy soils throughout the western parts of the Provinces of Córdoba and Buenos Aires and in all of the Territory of La Pampa.

In the southwestern part of the Province of Buenos Aires and in the Territory of La Pampa, the soils are incapable of heavy cropping. Much of the land in those regions is worn out from almost continuous grain farming. As indicated by the low yields, maintenance of fertility in this region is a pressing problem.

Fertile, dark-colored soils are found in the Tres Arroyos-Belcarce wheat-growing district of southern Buenos Aires Province. One of the serious problems of this, as well as of the entire southwestern part of the Province, however, is the nearness

to the surface of an underlying bed of limestone rock. The limestone formations frequently crop out on the surface of the land. Over a considerable part of the wheat area in this district the soil covering is not more than 18 or 20 inches deep. On lighter soils, wheat does not stand a long period of drought, but in the Tres Arroyos district the black-silt character of the soil considerably improves its water-holding capacity so that it is capable of withstanding drought conditions fairly well. Because of the lack of depth for plants to secure fertility and because of the general lack of moisture reserves, the productive capacity of the land in southern Buenos Aires Province is considerably impaired.

The eastern part of the Province of Buenos Aires, extending well into the Province from the Atlantic Coast, is a low, poorly drained region, unsatisfactory for grain and used almost exclusively for grazing purposes.

#### Disease and Insect Pests

Diseases and insect injury are not serious factors in the Argentine wheat enterprise. Yellow stripe rust (*P. Glumarum*) appeared in 1929 and at the present time is the most serious of the rusts in Argentina. Varieties fairly resistant to orange leaf rust (*P. Triticina*) have been developed. During the past 2 years, Lin Calel has seemed to be particularly susceptible to the latter form of rust, and as a result the acreage sown to this variety is said to be declining. Stem rust (*P. Graminis*) appears in small amounts but not to any significant extent.

Seed treatment for stinking smut is general. Possibly the disease to which the Argentine wheat crop is most susceptible is Australian Take-all. This has become general in the southwestern part of the cereal and livestock zone and is associated with worn-out soils or low fertility. Increased damage caused by this disease has awakened farmers in the southwest to the importance of adopting crop rotation and improving farming practices. A type of stem borer (*Prosalidius Rufus* Hust) was the cause of some concern a few years ago but it has not become a serious problem.

#### COMPETITION WITH OTHER GRAINS

##### Yield and Acreage Relationships of Wheat and Corn

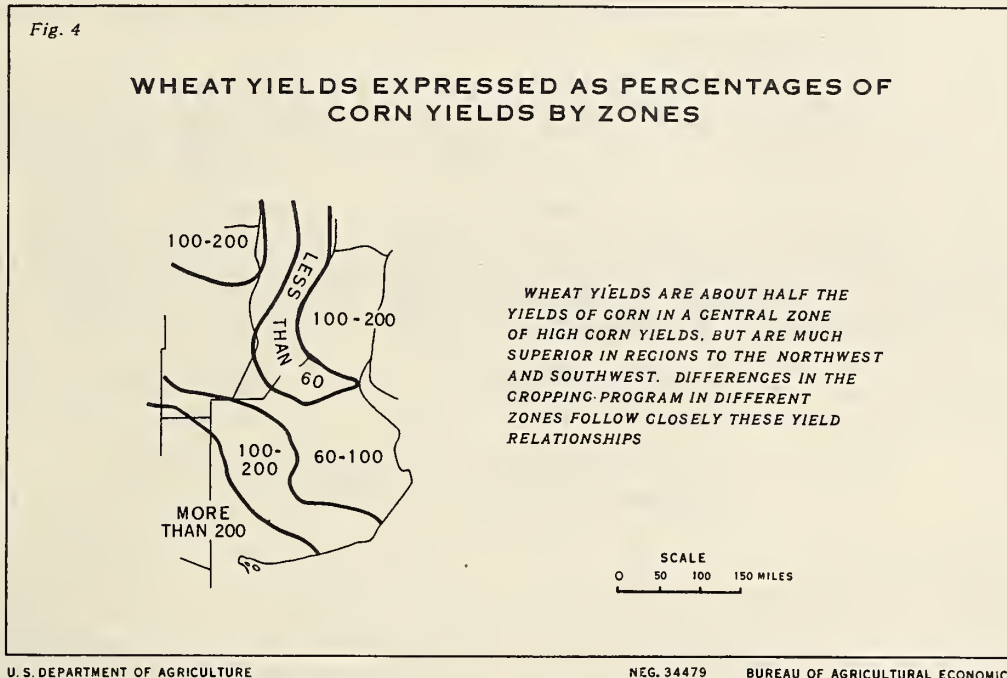
There are no data on comparative crop returns as a factor in the selection of crops or in the cropping system. A comparison by districts of yields of wheat with yields of other crops, notably corn and flax, enables a comparison by districts or zones where wheat does relatively better or more poorly than competing crops. Average county yields of wheat (1929-30 to 1934-35), expressed as percentages of average yields of corn and of flaxseed, are given by zones in figures 4 and 5.

If county prices were available, value-per-acre relationships would reflect more accurately the competitive power of the different crops; but, under price conditions prevailing in Argentina, yield ratios and value ratios are about equally effective in explaining regional specialization. The leading crops of wheat, corn, and flaxseed are all produced for export, and differences in prices in different districts are explained chiefly by differences in freight rates to the port cities.

In figure 4, which indicates the relationships of wheat and corn yields, a central zone will be noted in which the yields of wheat are only 60 percent of corn yields. While some of the highest yields of wheat are obtained in this zone, it is



also the zone of highest average yields for corn, the average being 19 bushels for wheat and 35 bushels for corn. Here wheat and corn both do well, but the comparatively better yield of corn explains why in 1934-35 corn made up from 60 to 75 percent of the total crop area. Wheat sowings that year represented almost negligible percentages on the eastern side of the central zone, but on its western edge wheat acreage constituted about 30 percent of the crop area. In no zone is the comparative advantage of corn or disadvantage of wheat greater than in this central region.



In general, the yields of both wheat and corn decline progressively proceeding away from this central zone to the southwest and northwest, but yields of wheat decline less sharply, with the result that the yield relationship of wheat to corn improves.

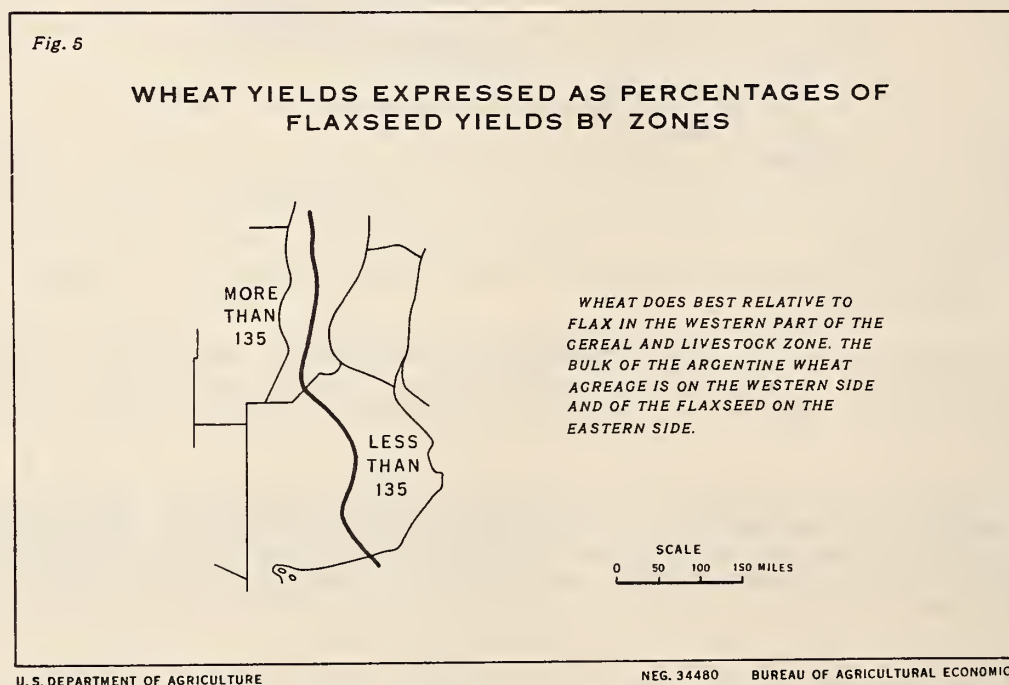
On the outer boundary of the zone that surrounds the central region, the yield relationship of wheat improves to the extent that wheat yields and corn yields are about equal - 16 bushels of wheat and 16 bushels of corn per acre. In most of the counties in this second zone, wheat and corn occupy about equal percentages of the crop area and the rotation practiced on many fields consists of alternating corn and wheat.

On three sides of the "60 to 100 percent" zone are regions in which wheat yields exceed corn yields by a substantial margin. Wheat, therefore, occupies a correspondingly larger place in the cropping system, increasing from 40 percent of the total crop acreage on the northern edge to 75 percent and more in southwestern counties in the Province of Buenos Aires and in adjoining counties in the Territory of La Pampa.

In the extreme southwestern part of the Province of Buenos Aires and in the Territory of La Pampa, corn does too poorly to warrant practical comparisons. To

the southwest, ultimately, conditions become too hazardous for the planting of any crops. Corn progressively declines in importance in the cropping system from occupying about 40 percent of the crop area on the northern edges of this zone to its practical disappearance in the extreme southwest. The percentage of corn in many of the counties of this region appear to be exceptionally high, considering the low yields. The explanation lies in the extent to which corn is planted for roughage and for improving the land for wheat. This is not a commercial corn region, and yields of marketable corn in themselves would not justify the present acreage of corn in many of these counties.

Figure 4 shows that a "more than 200 percent" boundary line is drawn to the southwest. This line not only indicates the great comparative advantage of wheat in that region but also marks the dry, sandy region to the southwest, excluding the Tres Arroyos district, in which it is difficult to find reasonably adaptable crops other than wheat and rye. The problem of finding a suitable crop rotation, maintaining soil fertility, developing a mixed system of farming, and, in general, improving the returns from farming in this region of low wheat yields is quite complicated. Yet fully 25 percent of the Argentine wheat acreage and 15 percent of the production is accounted for by this marginal region.



In the San Francisco district, which comprises the northwestern part of the Province of Santa Fe and the northeastern part of the Province of Córdoba, wheat also out-yields corn. Wheat not only yields well in this district but is much the safer crop. Although only 100 miles south of the main corn zone, the San Francisco district suffers from December and January droughts and locust damage. For that reason, as much as 70 percent of the crop acreage is in wheat and only 10 percent in corn. One of the heaviest concentrations of wheat acreage in the Argentine is in the San Francisco district. Nearly one-sixth of the total Argentine wheat crop is produced in this northwestern area.



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Wheat yields in relation to those of corn in the Province of Entre Ríos - the remaining "100 to 200 percent" district - are favorable, but this is chiefly because of low yields of corn. Wheat occupies about 30 percent of the crop area and corn about 10 percent. Flax is comparatively the best crop in this Province and occupies from 50 to 75 percent of the crop acreage.

#### Yield and Acreage Relationship of Wheat and Flax

In general, the soil and climatic conditions for wheat and flax are so different that there is little competition between these two crops for the use of the land. Flax yields, both absolute and compared with those of wheat, decline progressively proceeding westward. In the eastern half of the cereal and livestock zone, flax does much better than wheat. In the western half, however, wheat does much better than flax.

A line running from north to south, through the Province of Santa Fe and through the eastern side of the Province of Buenos Aires, therefore, separates the regions where flax is the predominant crop and the regions where wheat is chiefly grown. East of the line lies the bulk of the flax acreage and yields are high. In many counties of the Provinces of Santa Fe and Buenos Aires, flax acreage occupies from 25 to 60 percent of the total crop acreage, and in Entre Ríos about 65 percent is sown to flax. West of the line, wheat yields are more than 135 percent of those of flax, and here the acreage of flax is small compared to the wheat acreage.

#### Acreage Relationship of Oats, Rye, and Barley to Wheat

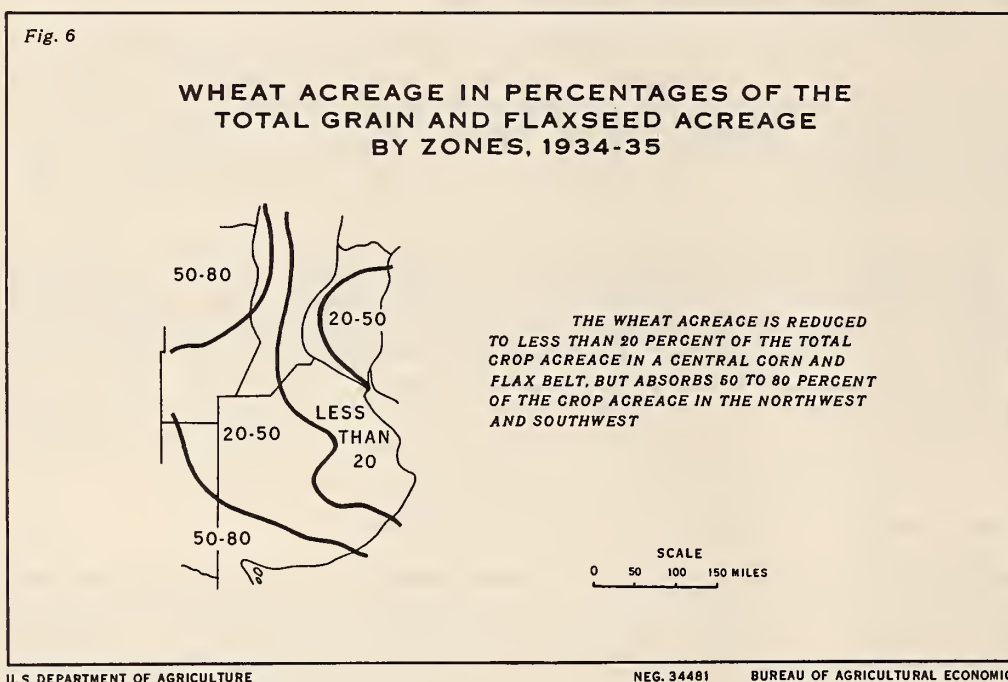
Approximately 7,400,000 acres are sown annually to oats, rye, and barley in Argentina. Oats and rye, comprising 5,400,000 acres, to a large extent are sown for winter pastures with grain yields of secondary consideration. Cattlemen are relying to a greater and greater extent upon rye and oat pastures for winter grazing. The acreage devoted to these two grains, therefore, has doubled in the last decade. If other pastures are good in the spring and growing conditions are favorable, cattle and sheep are taken off the rye and oats early enough to enable these fields to make a grain crop, even if the stands are thin. If pastures are poor, a smaller acreage is left for grain. Only one-third of the Argentine sown acreage of rye and not more than 65 percent of the sown oat acreage are harvested. Less of the barley is pastured and practically no wheat.

In the Tres Arroyos region, native pastures and alfalfa are so poor and tame grasses do so poorly when fields are reseeded that the oat acreage is large. On many farms in this area the rotation is wheat, oats for grain, and volunteer oats. In a number of the counties as much as 25 percent of the crop acreage is sown to oats. There are counties with sandy soils in the western part of the Province of Buenos Aires and the eastern part of the Territory of La Pampa where as much as 40 or 50 percent of the crop acreage is in rye. On a strict cash-crop basis, barley offers some competition to wheat in the southwestern part of the Province of Buenos Aires. On some farms, barley yields and returns, especially of brewing barley, compare favorably with those of wheat; and there are many counties in the south with from 10 to 15 percent of the crop acreage in barley.

#### Position of Wheat in the Entire Cropping System

The place of wheat in the cropping system as a consequence of crop rotation is indicated in figure 6, which gives the percentages by zones of the total crop

acreage in 1934-35 sown to that crop. Though reduced to small or almost negligible figures in the central corn and flaxseed belt along the eastern side of the Provinces of Santa Fé and of Buenos Aires, the percentages of the total crop acreage sown to wheat increase progressively proceeding to the northwest and southwest and reach as high as 80 percent in the northwestern and southwestern corners of the cereal and livestock zone.



The percentages given in figure 6 apply to the 1934-35 crop year. Although these percentages are not materially modified from year to year, the cropping program in Argentina, due to its almost exclusively commercial character, is responsive to changes in the relative prices of the three major crops within their rather restricted limits of reasonable adaptability and interchangeability.

Since 1930, the tendency, in general, has been for wheat acreage to decline and for corn acreage to increase in regions where there is close competition—particularly in the Provinces of Santa Fé and Córdoba. In the Province of Buenos Aires, however, the wheat acreage has been maintained at the peak established in the 1928-1930 period.

Probably of as much importance as relative prices in modifying the cropping system are possible changes in the cropping program brought about by improved and more intensive practices and changing economics of production. Because of the large-scale operations and the comparative newness of the agriculture, one is impressed, also, with the fact that the adaptability of various crops in many regions has not been completely tested.

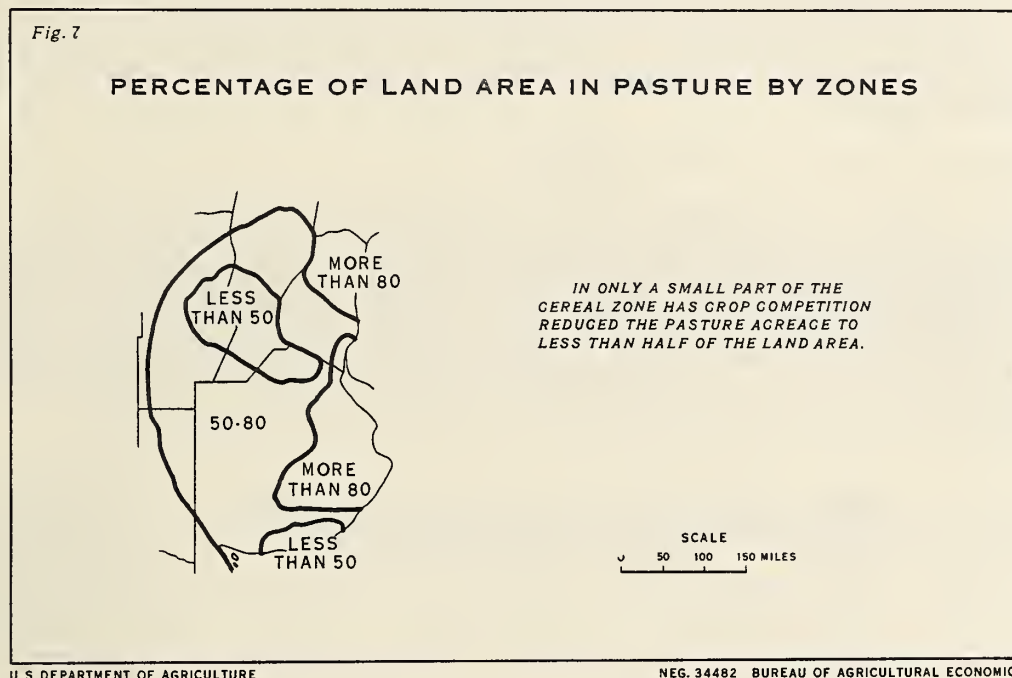
#### GRAINS VERSUS LIVESTOCK IN ARGENTINE AGRICULTURE

Competition of individual grains with pasture in Argentina resolves itself into competition between very specialized types of farming, namely grain growing



versus livestock raising. The tendency to separate almost completely one type of farming from the other is due to the inherent difficulty of administering or operating large landholdings other than as exclusively tenant grain farms or exclusively grazing tracts.

Since very little corn or other grain is fed to cattle in Argentina, the traditional cattle and sheep industries are almost entirely grazing industries and are especially influenced by the amount and quality of the pasture grasses. The important position occupied by pastures and by the grazing industries is indicated by the high percentages of pasture in the cereal and livestock zone, as shown in figure 7.



#### Alfalfa Crop. Key Factor

The ability of the grazing and livestock industries to retain such an important place on some of the best soils is due, in part, to the ease with which alfalfa grows in a great part of the cereal zone and the high carrying capacity of these alfalfa pastures. Alfalfa acreage in the cereal zone is estimated at about 12 million acres, and alfalfa pastures, which provide excellent feed for 9 months of the year and some feed throughout the entire year, are one of the leading agricultural assets of the country. The large alfalfa crop explains the large number of steers finished exclusively on pasture, and it is a considerable factor in the successful competition of the grazing industry with grain farming. There are other grasses that also provide pasture in some districts the entire year and contribute to the economic standing of the grazing industry - particularly dairying.

In the productive central zone of high corn, flax, and wheat yields, more of the land is cultivated than in any other region in Argentina and the pasture acreage is the smallest. Even here there are many counties where pastures absorb from 40 to 45 percent of the land area. Considerable dairying is carried on in this area.

In a southern zone close to the Atlantic coast, the pasture acreage is comparatively small. Here native pasture grasses and alfalfa do very poorly, and the grazing industries are restricted by this factor and must depend to a considerable extent on oat and rye pastures.

Most of the "50 to 79 percent" pasture zone is wheat land and warrants, therefore, special examination. The northwestern part of the Province of Buenos Aires and adjacent districts in the Provinces of Santa Fé and Córdoba are the center of the grazing industry at its best. In that region, steers for the English market are finished on alfalfa and on supplementary rye and oat pastures. Because of the light soil and lack of rain, wheat and corn yields are rather low. Alfalfa, however, does well, the water is good, and land values are lower than in the corn zone. Land owners calculate a steer to the hectare (2.471 acres), and cattle raising on the well-managed estancias in that region is probably as strongly entrenched economically as wheat farming is in the San Francisco and Tres Arroyos districts or corn growing is in the Rosario district.

#### Wheat Displacing Grazing in Certain Regions

To the north of this feeding area in the Province of Córdoba and to the south in the Province of Buenos Aires, pastures are dry for several months of the year, and returns from grazing cattle are comparatively low. Farther south, much of the land is in short pasture grasses, and cattle grazing is not as remunerative as sheep grazing. In these two districts, as well as in southwestern Córdoba, wheat farming is slowly tending to displace grazing on the best soils. Landholdings are large and many are poorly operated. Shifts to a somewhat more intensive and better utilization of the land in the form of growing wheat and grain have been greatest in those districts.

In many counties in the east-central part of the Province of Buenos Aires, more than 90 percent of the land is in pasture. Nearly all of this region is poorly drained; and, although wheat growing is pushing out into this region from the western side, most of the land can find no more profitable use than as pasture for sheep and cattle for breeding purposes. This part of the Province of Buenos Aires is a leading source of yearling steers, which are shipped or driven overland to the feeding areas to the west where they are grown out and finished on alfalfa pasture.

Pastures in the "more than 80 percent" pasture zone in the Territory of La Pampa are poor; but, economically speaking, wheat growing probably displaced too much pasture land in the 1923-1928 period and probably pushed too far westward in this region of sandy soil and scant rainfall. Under the stimulus of high wheat prices during the 1920's, the wheat acreage expanded greatly in this region; but, with sharply lower prices since 1930 and declining fertility and yields, the total crop area has declined 40 percent from the peak expansion of 1928 and at the present time is slightly below the pre-war level.

#### Ease of Administration Favors Estancia System

Much of the pasture land in all these zones, however, is capable of growing wheat and other grains, and its utilization as pasture is influenced greatly by the prevailing system of large landholdings and the ease with which these tracts are operated as cattle and sheep estancias. The capital requirements are considerable in respect to the investment in land, fences, and cattle or sheep; but the estancias represent much the simplest means of administering large holdings. This system is the only means by which the owners can personally direct and manage operations on



such large tracts (minimum size about 5,000 acres). The income from cattle and sheep is, moreover, more constant and dependable than from crops; and it is stated that in the 5-year period prior to the last year or two of high grain prices, the returns from livestock have been uniformly as good as, or better than, those from grain.

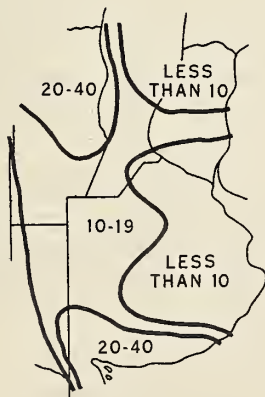
Converting a tract of grazing land into tenant grain farms involves other considerations, however, besides that of financial returns. Livestock grazing has been the traditional source of wealth in Argentina, and there is a social and economic standing associated with it. The estancias are institutions reflecting wealth, a manner of living, and, in many respects, an agricultural aristocracy paralleling, to some extent, that of the Southern States of the United States during the height of the cotton-plantation system. Shifting to grain farming marks the end of personal direction of extensive herds and flocks and, more especially, of the manner of living associated with the estancias. The former "estanciero" ceases to be the actual director of operations and becomes merely one concerned largely with administrative matters involving scores to hundreds of tenants.

#### Shift from Estancia System to Grain Production

Most observers in Argentina recognize that substantial amounts of the present grazing land are being very inadequately and poorly utilized. The wealth of some of the old landowning families and their income from large tracts have enabled them to carry on despite low financial returns, if not losses. Rising land values before the depression enabled many to persist in a tradition and to postpone changes and adjustments demanded by low returns and poor management.

Fig.8

#### PERCENTAGES OF THE TOTAL LAND AREA SOWN TO WHEAT BY ZONES, 1934-35



CROP AND LIVESTOCK COMPETITION RESTRICT THE WHEAT ACREAGE TO A SMALL PERCENTAGE OF THE LAND AREA IN A CONSIDERABLE PART OF THE CEREAL AND LIVESTOCK ZONE, BUT IN LEADING WHEAT PRODUCING DISTRICTS TO THE NORTHWEST AND SOUTHWEST THE WHEAT ACREAGE COMPRISES 20 TO 40 PERCENT OF THE LAND AREA.

SCALE  
0 50 100 150 MILES

Since 1929, however, more and more attention has been given to the better utilization of land. Emphasis upon better returns is opening up grazing tracts to tenant grain farmers. It is in consequence of these broad developments, therefore, that the trend of grain farming is slowly upward.

The result of the combined influences of crops and pastures in determining the amount and distribution of the wheat acreage is indicated in figure 8. It will be noted that, in the southwestern and northwestern wheat-growing regions, wheat occupies from 20 to 40 percent of the total land area; in the central and western wheat-producing districts, only from 10 to 19 percent; and in the northeastern and southeastern districts, less than 10 percent.

#### The Wheat Crescent

Because of the various physical and economic factors referred to, the wheat acreage of Argentina is concentrated to a large extent in an elliptical form in the western part of the cereal and livestock zone. The distribution of the acreage, known as the wheat crescent, is illustrated in figure 1. The crescent stretches for approximately 600 miles from the southern part of Buenos Aires Province, in the vicinity of Bahía Blanca, to northern Córdoba and central Santa Fe. Lands with arid soil conditions bound it on the west and northwest, and corn- and flax-producing regions and low pasture lands bound it on the east.

#### FARM ORGANIZATION AND TENANCY IN ARGENTINA

Possibly one of the most distinctive features of the organization of agriculture in Argentina is the extent to which crop and livestock farming are carried out as independent types of farming. The terms "estancia" and "chacra," "estanciero" and "chacarero," referring respectively to a livestock farm and a grain farm, a livestock farmer and a grain farmer, are significant and necessary distinctions in Argentina.

#### Bulk of Wheat Acreage Farmed by Tenants

Probably as much as 75 percent of the Argentine wheat acreage is located on tenant farms where pastures for work animals and for a few cows are restricted by the condition of the lease to 10 or 20 percent of the rented area. The balance of the production occurs on owner-operated farms where there is a degree of mixed-grain and livestock farming and on estancias where some grain acreage is sown under estancia administration. Usually, when estancia owners wish to cultivate a portion of the estancia, tenant farmers are called in for that purpose; but there are many estancias where from 2,500 to 5,000 acres of wheat are sown by men employed directly by the owner of the estancia.

A traveler in the wheat districts usually encounters tenant farmers belonging to this or that "colonia" or rented tract, and but rarely owner-operators. In fact, these districts are made up of tracts of from 10,000 to more than 37,000 acres, on each of which there are from 15 to 30 tenant farmers, depending upon the size of the tracts. Each "colonia" or tract has an administrator or manager, who supervises tenant operations in the interest of the landowner.

Although mixed-farming operations are not general, one of the largest wheat growers in Argentina - possibly the largest - combines grain and livestock enterprises on a large scale. The data on this owner-operator's activities are included because of the large scale on which his operations are conducted. He operates 11 different places with a total acreage of 173,000 acres. Of that area about 74,000 acres are in alfalfa and 35,000 in rye, primarily for winter pasture for feeding some 25,000 steers. In addition, from 15,000 to 24,000 acres are sown to wheat and about 15,000 acres to corn, the latter for summer grazing. The owner contends that administration expenses are low, that the machinery investment, especially that for



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35 combines, is put to a maximum use, and that the operations are more efficient than under a system of tenant grain farmers or exclusively livestock estancias.

#### Large Landholdings the Rule

The explanation for the degree of separation of specialized grain- and livestock-farming operations is to be found in the size of the landholdings. Most of the estancias consist of from 6,000 to 12,000 acres; but, as an indication of larger holdings, in the Province of Buenos Aires alone, there are 50 families with holdings in excess of 75,000 acres each.

The grazing of cattle and sheep on such large estancias involves many administration and management problems for the landowner, and relatively few add to these problems by hiring more farm hands and engaging in grain farming on any significant scale. Lack of capital on the part of tenant farmers and considerations associated with tenancy tend to restrict the size of tenant farms to units of large-scale grain production and to exclude livestock enterprises almost entirely.

Changes in this matter of organization, however, are now taking place. There is a tendency to sow more grain on the estancias, even if it involves considerable additional administration. Greater use is being made of corn for forage purposes. The necessity to reseed each year a somewhat larger acreage with alfalfa, since its average life of 6 or 7 years is less than formerly, involves some grain farming. Apart from better utilization of the land, considerations of increased returns likely to result from diversification have also influenced many to undertake the growing of corn and wheat. A number of large landowners contend that changes of this character are inevitable. In general, when large landowners dispose of a tract of land, they prefer to sell it intact. The number of landowners who are willing to subdivide their properties into sufficiently small lots to attract owner-operators, however, is increasing. Indications throughout the corn and cereal zone, and especially in the Province of Santa Fe', are that the small owner-operated holdings tend to become mixed-grain and livestock farms.

#### Share and Cash Rentals and Land Values

Share tenancy prevails at the present time in the wheat zone, with from 25 to 30 percent the usual share. Cash rents vary from 15 to 25 pesos per hectare, equivalent to from \$2.00 to \$3.35 per acre. <sup>2/</sup> Land values vary from 350 pesos per hectare at Tres Arroyos to 120 pesos in the southwest in the Province of Buenos Aires, equivalent to about \$47 and \$16 per acre, respectively. Because of the amount of land that each tenant operates, the investment in houses and machinery ranges from \$1,500 to \$5,000. Farm labor at 50 pesos per month, including food, is equivalent to about \$17 per month.

The average size of the tenant farm in the different wheat-growing regions varies greatly. In a wheat-corn growing district in the western part of the Province of Buenos Aires, the average size of farms is 370 acres; in the San Francisco district, 520 acres; in the Tres Arroyos wheat, oat, and rye region, 490 to 1,200 acres; and in the extreme southwest, about 1,200 acres.

On small owner-operated farms in the Province of Santa Fe', the wheat acreage per farm is small and the use of push-headers and the stacking of wheat is common.

<sup>2/</sup> All conversions made at the June 1938 average official rate of exchange - 1 peso = 33.0534 cents.

In the Provinces of Buenos Aires and Córdoba, however, the use of combines is general. In these two Provinces, a consideration of the efficient utilization of the capacity of combines - 370 to 620 acres - has entered into the adoption of the present size of tenant farms. From 10 to 20 percent of the farm acreage is usually allowed as pasture for horses and a few cows.

In cost-of-production estimates issued by the Argentine Ministry of Agriculture for the 1935-36 crop year, the following percentage distribution of the cost items in the estimated average cost of 6.92 pesos per 100 kilos of wheat delivered to the ports (about 62 cents per bushel) is of interest: rent, 20 percent; interest, 8 percent; depreciation, 10 percent; expenses of production, 35 percent; bags, hauling, and handling, 12 percent; and freight, 15 percent.

#### Nationality of Tenants and Living Standards

Italian and Spanish tenants, mostly foreign born, predominate in the cereal zone, but there are colonies of many nationalities - Russians, Germans, Netherlands, Poles, Danes - scattered throughout the wheat zone. Many of them prosper and some acquire pieces of land for themselves, but they continue to operate as tenant farmers.

Since 1929, the returns to tenant farmers in the western zone have been low, and living conditions reflect difficult circumstances. Even in the zones of better yields, however, the living standards of the tenant farmers are low. It is difficult, in general, to reconcile these low living standards with the general productivity of the cereal zone. One explanation advanced is that the tenants, mostly Italian immigrants or descendants of Italian immigrants, live much better than they or their parents did in Italy; and this, together with their lack of education, accounts for their apparent failure to want better living conditions or to secure more comforts.

The fact that tenants do not own their land and must build their own houses undoubtedly deters many from making substantial investments in homes. Even with tenants who remain on the same tract of land for many years the living standards do not seem to rise greatly. Differences in racial standards, however, assert themselves. The Danes and the Netherlands surround themselves with some of the orderliness and comforts characteristic of the countries from which they emigrate.

#### SELECTION OF IMPROVED WHEAT VARIETIES ENCOURAGED

In an effort to improve the quality of Argentine wheat and its standing in foreign markets, the problem of the best wheat varieties for Argentina has been given much attention during the past 3 or 4 years. The first pedigreed variety was developed in Argentina in 1921 and was so much superior in yields to the varieties of mixtures being grown at that time that a great stimulus was given to the selection and creation of new varieties.

#### Shift in Emphasis from Yield to Quality

In the absence of premiums or higher farm prices for wheats of higher quality, the emphasis in plant breeding was largely on yields and adaptability. Recently, the use of precision instruments, such as the Brabender farinograph, relating to the measurement of quality factors, has directed attention to the milling qualities of each variety and, as a result, quality as well as yield has become an objective.



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In 1933, the Government took definite measures to eliminate the varieties of lowest milling quality and to stimulate sowing of the best varieties. Lists of recommended, permitted, and undesirable varieties were given publicity. In purchases by the Government Grain Board in 1934 and 1935, the most objectionable varieties were discounted in price. Since 1933, additional study has been given to the quality of these various types. In addition, the distribution of new varieties has been placed under governmental control.

The entire subject of the qualities of the different varieties and their suitability to different regions is now receiving expert attention. Some progress has been made in the elimination of a few of the most objectionable varieties; but, until changes in grading and marketing provide farmers with adequate premiums and discounts for quality, the yield factor will no doubt continue to be the dominant consideration in the choice of varieties sown.

#### Leading Wheat Varieties Sown

The six leading varieties sown in 1936 and the percentages they represented of the total wheat area, according to data compiled by the agronomists of the various railways operating in the cereal zone, where M.A. (Ministry of Agriculture) 38, 25 percent; Lin Calel M.A., 21 percent; Kanred, 13 percent; Blackhull, 6 percent; San Martin, 4 percent; and Klein 32, 4 percent. These varieties comprised 73 percent of the sown acreage in 1936.

M. A. 38 is a quick-maturing, semihard variety developed by the Ministry of Agriculture. It is especially popular in the northern half of the wheat zone. Kanred, Lin Calel M.A., and Blackhull are the leading varieties in the southern zone. Klein 32 is a comparatively short-season variety and has yielded well in the central part of the Province of Buenos Aires. San Martin is a high-yielding, soft variety and one of the "undesirable" varieties from the standpoint of milling quality. It occupied 15 percent of the wheat area in 1931.

Some 10 other varieties, mostly newly created varieties of Argentine origin, comprised an additional 13 percent of the wheat acreage. A significant change in respect to varieties has been an improvement in the position of Lin Calel M.A. from 6 percent in 1931 to 21 percent in 1936. Susceptibility of this variety to yellow stripe rust, evident during the past 2 years, however, may cause it to decline in importance. The positions of M.A. 38 and Kanred have not changed materially, but the latter is tending to lose ground somewhat to shorter-season varieties.

In general, the varieties grown in the north are of spring habit and those in the south of winter habit. The winters, however, are mild, and sowing is carried on throughout the winter and into the spring; so, with the exception of the winter varieties in the southwest, the distinction is not definite.

Associated with the relatively humid conditions in the north and the drier conditions in the southwest, the wheats in the northern half of the wheat zone are soft and semihard while those in the southwest are hard. There is a small acreage of Durum - 1 percent of the total.

In the opinion of J. H. Shollenberger, formerly of the Grain Division of the United States Department of Agriculture and at present advisor to the Argentine National Grain and Elevator Commission, the hard wheats of the southwest, possibly 20 percent of the total Argentine production, are similar in quality to United States hard winter wheat and the wheats of the north are comparable with United States soft

winter wheat. One of the particular objectives of the Argentine grain-grading program is separation of the hard wheat of the southwest from other wheats and marketing it so as to secure prices comparable with those obtained for American hard winter and Manitoba wheats in the Liverpool market.

#### MARKETING ARGENTINE WHEAT

Wheat in Argentina is handled in bags of 60 or 65 kilograms (132-143 pounds). Most of the hauling from stubble fields to railway stations is in horse-drawn carts owned by "carreros," who do this type of work on a piece-rate basis. At the railway station, the bags are raised upright at the rear end of the cart, lowered to the shoulders of warehouse hands to be weighed, and then carried either to storage space in the warehouse or directly into railway cars.

"Receiving wheat" at the country stations involves the process of supervising the weighing, extracting a composite sample for determining test weight, and accepting delivery. Handling of the wheat by warehouse laborers is well organized at each railway station. The charge for handling the grain from cart to scales and from scales to railway cars or storage sheds is 6 centavos per bag, equivalent to about eight-tenths of a cent per bushel. Most of the grain moves in open railway cars under tarpaulin covers to privately owned grain elevators in the port cities.

Two of the large export firms maintain offices at the leading stations in the cereal and livestock zone and buy directly from farmers. Most of the wheat, however, is sold by growers to grain buyers in the interior. Most of the interior buyers are also owners of large general stores. Practically all of these stores have grain departments and, to a considerable extent, finance the tenant farmers.

#### Much Wheat Stored at Railway Stations

There are only a few country elevators in Argentina and practically no storage of grain on farms, but there are extensive facilities for grain storage in railway station sheds or warehouses. There are few railway stations in the wheat zone without from one to six galvanized iron sheds built by the railways or grain buyers on the railway right of way. The capacity of the present sheds or warehouses owned by the railways is estimated to be 6,600,000 short tons and of the private sheds, 1,800,000 tons. The investment in these warehouses by the railways is placed at 75,000,000 pesos. <sup>3/</sup>

This storage space compares with an annual average production of about 20 million short tons of all grains and flaxseed in Argentina. Farmers have first option on the space in the warehouses owned by the railways, but growers frequently do not use the space available and it is leased to grain dealers. The charge for storage space in the warehouses is 20 centavos per square meter per month (about 5.5 cents per square yard.)

While railway-station storage is recognized as extremely economical, it lacks the facilities of elevators for moving and keeping grain in condition. Apparently there have been few times when farmers have not been able to secure warehouse space for their wheat, although in years of large wheat crops grain buyers have been compelled to build large piles of sacked grain in the open along the railway tracks. The sacks are piled on a platform raised a few inches from the ground and covered with a tarpaulin or canvas.

<sup>3/</sup> The port elevator capacity is about 660,000 short tons and the country elevator capacity 386,000 tons.





Figure 9.

#### Elevator-Construction Program Under Way

Additional country and terminal elevator capacity, public elevators, and credits based upon warehouse receipts are matters now receiving the attention of an Elevator Construction Commission and of the National Grain and Elevator Commission created in 1935. The terminal-elevator program contemplates the construction by the Government of 14 new elevators to be located at various ocean and river ports with an estimated capacity of 721,000 short tons and a cost of 52,000,000 pesos (\$17,000,000). Contracts for a substantial part of this construction have been awarded. Further study is being given to the country-elevator program. Shifting from sack to bulk handling is sought, but progress in this respect may be slow because of practical difficulties inherent in tenancy and in the present methods of handling grain from fields to railway stations.

On account of the proximity of wheat-producing districts to river and ocean ports, the rail haul on fully one-half of the wheat production does not exceed 100 miles. The freight charge for this distance is approximately 1.20 pesos per 100 kilograms or about 11 cents per bushel. Prior to the present extensive development of rail and truck transportation, large high-wheeled wagons were used in trucking wheat long distances. Some wheat still moves in these wagons, which are capable of hauling as much as 7 tons, but they are disappearing rapidly and the truck movement of wheat to market centers is growing in volume. As a result of the improvement of roads and the greater use of trucks, a vast portion of the Argentine crop is now within trucking distance of river and ocean ports.

#### New Grading System Now Being Evolved

With minor exceptions, farmers sell their wheat to country buyers almost exclusively on a test-weight basis. Premiums and discounts are provided for wheat

above or below a test weight of 80 kilograms per hectoliter (62-pounds per bushel). When premiums are paid for special varieties or lots of exceptionally good color, it is the result of bargaining between buyer and seller and not because of a formal grading system and market quotations by grades.

Formerly in the European import trade, Argentine wheat was known under the names of Rosafe, Baril, Baruso, and Entre Ríos, and with these names were associated qualities based upon the wheats being grown in the commercial zones tributary to the ports of Rosario or Santa Fe, Buenos Aires, and Bahía Blanca, and in the Province of Entre Ríos, respectively. In recent years, however, modifications of these designations have developed.

The Baruso wheats grown in the Bahía Blanca and Necochea districts are of the hard type and are considered of the best quality, but in the local market the premium paid for them above Rosario or Buenos Aires wheat has been extremely small. In the export trade, Brazil has always paid a premium for the better wheats, and a Brazil grade has grown up out of this preference.

Exceptional lots of Argentine wheat are also sold on sample to continental buyers, with the result that the bulk of the shipments to England represent ordinary wheat after the best lots have been withdrawn for the Brazilian or continental market. In the London Corn Trade Association, f.a.q. samples of each month's shipments to Europe, according to certain groups of ports of origin and certain specified test weights, comprise standards against which arbitrations are made in sales transactions of Argentine grain in the European trade.

The weakness of this grading and marketing system lies in the lack of designation of quality wheats and, in the absence of a highly competitive market, the inability of farmers to secure adequate premiums for quality. In the domestic baking and milling industries, there is likewise little appreciation of quality, and consequently only small premiums are paid for quality wheats.

#### Official Samples Selected Annually

Governmental attention has, in recent years, been given to improvement in grading and marketing. On December 11, 1935, in accordance with the recommendations of an Advisory Committee, the Government adopted statutory limitations or bases for 18 grades of Argentine wheat within which f.a.q. standards are established annually. These standards consist of three types - hard, medium, and soft - for each of the three commercial zones of Rosafe, Buenos Aires, and Bahia Blanca and two grades within each type based upon test weight and other physical factors.

Wheats that fail to make the No. 2 grade are designated as "out of grade" and are marketed on a sample basis. The official f.a.q. standards for each grade are prepared from small samples that farmers are required to mail to the Grain and Elevator Commission for this purpose. The official samples for the 1936-37 and 1937-38 crops were adopted on March 12, 1937, and March 16, 1938, respectively.

Classification of the wheats as to hard, semihard, or soft is based upon varieties. Varieties are grouped into these classes according to their average industrial quality without any particular regard for differences in kernel texture, as the type names might imply. The emphasis placed by the Grain and Elevator Commission upon variety as the basis of classification or grouping is in accordance with



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the judgment of the Advisory Committee that quality of wheat, particularly as to strength of gluten or the corrective quality of the wheat as used in the milling industry, is essentially a variety characteristic.

Some differences in quality due to differences in growing conditions in the Rosafe, Bahía Blanca, and Buenos Aires districts, are provided by the origin of the wheat, but apparently no provision is made for variations in growing conditions and resultant varying quality in different years. Strictly speaking, therefore, classifying as to hard, semihard, or soft types becomes a matter of identifying or classifying the varieties.

Under the United States wheat standards, wheat is classified according to type - Hard Red Spring, Durum, Hard Red Winter, Soft Red Winter, and White. Each of these types or classes comprises numerous varieties, but each type is characterized by certain texture and kernel characteristics. Variety is not considered so important as environment in determining milling quality in the United States. In other words, while certain varieties tend to fall in specific type groups, their classification in this way is determined to a large extent by the area in which they are grown.

Since the Argentine grading system was adopted, the terms "hard," "semi-hard," and "soft wheats" have come into greater use in the producing districts; but, beyond designating types of wheat, the grades have not been applied to any significant degree in the buying of wheat by the country buyers or in its movement to port cities. Except for considerable varietal differences, test weight continues to be the primary basis upon which purchase and sale in the country are made.

In the future markets at Santa Fe, Rosario, and Buenos Aires, the official standard for No. 2 semihard wheat has replaced an f.a.q. standard sample formerly prepared annually by the Grain Exchanges and against which deliveries or arbitrations in each exchange are made. The Grain and Elevator Commission has authorized a departure from the test weight of this "official sample," however, and has permitted the use of a test weight of 80 kilograms for trading purposes.

#### Fixed Grades for Both Domestic and Export Transactions to be Adopted

The present grades have not been applied to export shipments, but ultimately the Grain and Elevator Commission hopes to adopt a certificate system of fixed grades for both domestic and export transactions. As grades or standards, therefore, for use in country sales and as standards in the futures market, the official f.a.q. standard samples have had little practical usefulness or significance.

In part, the limited usefulness of the grades that have been adopted to date is explained by the slowness with which changes of this character are made and, possibly, by inadequate storage and elevator facilities in the interior; but more especially the explanation lies in the weaknesses of the grades themselves.

Wheat starts moving the last part of December and, as indicated above, the standard samples for the past 2 years have not been formulated until March 12 and March 16, or until a substantial portion of the wheat crop not only has been sold by the farmers but has been exported. Final settlement for wheat sold by farmers could not reasonably be delayed pending formulation of the standards; and even after their formulation they did not enter into the country transactions to any

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appreciable extent. Out of the current experience, however, and from studies and analyses being made by the Grain and Elevator Commission more workable grades or standards may be evolved.

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HUNGARY INAUGURATES FIVE-YEAR PLAN

A Five-Year Plan was recently inaugurated by the Hungarian Government involving the expenditure of 1 billion pengos (about \$197,400,000), according to a report received in the Bureau of Agricultural Economics from its office in Belgrade, Yugoslavia. The plan provides for the development of a system of national defense, largely through improvement in the economic machinery of the country, particularly agriculture, and for a general improvement in the standard of living of the rural population.

A sum of 36 million pengos is to be appropriated, according to the Hungarian General Credit Bank, for the purpose of increasing agricultural production through the construction of new and enlarged irrigation works and related projects. An additional 19 million pengos are earmarked for use in furthering the marketing of agricultural products, in extending the system of agricultural training, and in soil-improvement and cattle-breeding projects.

To accelerate the settlement movement, 20 million pengos have been appropriated. An additional 75 million are to be used for the purpose of reorganizing agricultural credit and for financing credit transactions in connection with measures designed to bring about the gradual abolition of that old Hungarian economic and social institution, the "protected estate."

The financing of this billion-pengo program will doubtless be accomplished by floating a loan of 400 million pengos and placing an outright capital levy of 600 million pengos on the wealthier classes of the population. The Hungarian General Credit Bank, which recently absorbed the Hungarian General Savings Bank in a move toward the simplification and strengthening of the Hungarian credit structure, makes the following statement: "We have every reason to hope that our economic life will prove able to cope with this exceptionally heavy charge, which it has willingly undertaken."

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MEXICO TO REGULATE FOOD PRICES

Sweeping control of all foodstuff markets and prices in Mexico has recently been delegated to a committee, which is to function under the supervision of the Mexican Minister of National Economy, according to a report received in the Bureau of Agricultural Economics from American Consul Willard Galbraith, at Mexico City.

Provision is made for the equalization of foodstuff prices by governmental purchases, storage, and sale. Funds for the conduct of the activities of the committee are to be allocated by the Government. The decree simultaneously dissolved all Government organizations previously set up for the purpose of studying and recommending measures to reduce high living costs.

The committee is composed of the Minister of National Economy, acting as president, and representatives of the Ministries of Finance and Public Credit, of Agriculture and Development, and of Communications and Public Works. In addition, it has among its members representatives of various national banks and credit institutions.

Besides buying, storing, and selling foodstuffs in order to regulate prices, the committee is authorized to study and recommend legislation pertaining to customs tariffs, taxes, subsidies, transportation, freight rates, clearing houses, produce exchanges, and any other factor having an influence on foodstuff prices.

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#### NEW ZEALAND ESTABLISHES CITRUS FRUIT MONOPOLY

In order to give effect to its decision to set up an import monopoly for the handling of citrus fruits and bananas, the Government of New Zealand recently prohibited the importation of all oranges, mandarins, grapefruit, lemons, and bananas except with the consent of the Minister of Customs, according to a report received in the Bureau of Agricultural Economics from American Consul General L. C. Pinkerton at Wellington.

The Internal Marketing Division now becomes the sole legal importer of citrus fruits and bananas. The Ministry of Customs has announced that the Dominion's supplies of citrus fruit and bananas are to be drawn from countries supplying New Zealand in the past and in such quantities as will meet the requirements of the market.

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